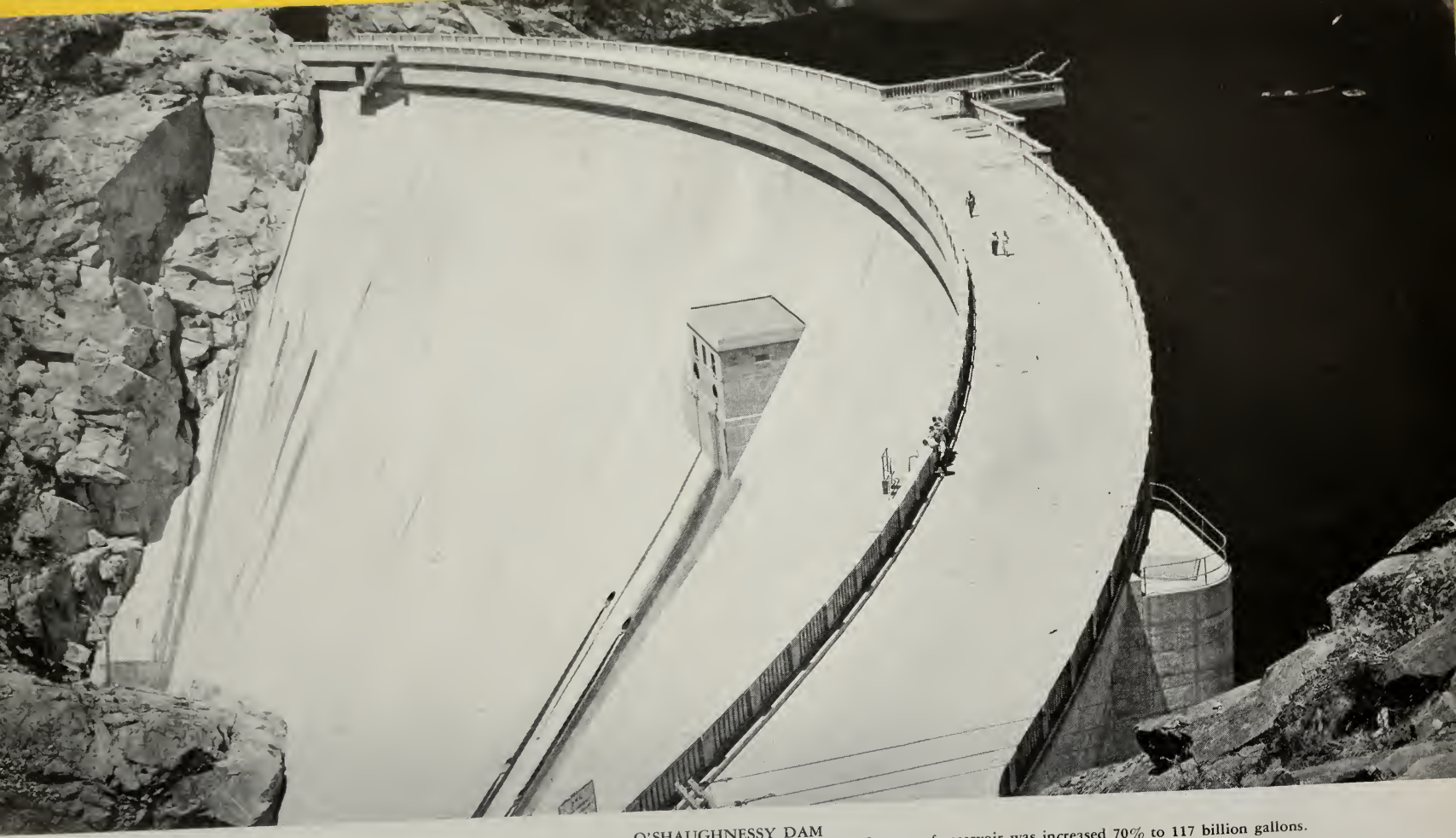
REPORT OF THE

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

FISCAL YEAR
1937-1938

MUNICIPAL RAILWAY
WATER DEPARTMENT
HETCH HETCHY WATER SUPPLY
HETCH HETCHY POWER SYSTEM
ELECTRIC POWER BUREAU
AIRPORT
LIGHTING OF STREETS
GAS AND ELECTRIC SUPPLY



O'SHAUGHNESSY DAM

View taken June 26, 1938, shows general view of completed structure after heightening 85½ feet. Storage of reservoir was increased 70% to 117 billion gallons. Dedication ceremonies were held October 16, 1938.

REPORT OF

SAN FRANCISCO PUBLIC UTILITIES COMMISSION

•

FISCAL YEAR 1937-1938

•

COMMISSIONERS

LEWIS F. BYINGTON
President

GEORGE FILMER
Vice-President

JOHN P. MURPHY

JOHN H. McCALLUM

JOHN P. McLAUGHLIN

•

EDWARD G. CAHILL
Manager of Utilities

•

FORREST B. GIBBON
Secretary of the Commission

JOHN J. SHARON
Director, Bureau of Accounts

Digitized by the Internet Archive
in 2014

https://archive.org/details/reportofsanfranc1937sanf

CITY AND COUNTY OF SAN FRANCISCO
PUBLIC UTILITIES COMMISSION
287 City Hall

February 1, 1939.

Honorable Angelo J. Rossi,
Mayor of the City and County of San Francisco.

My dear Mayor:

The Public Utilities Commission of the City and County of San Francisco is pleased to herewith submit its annual report for the fiscal year beginning with the first day of July, 1937, and ending with the 30th day of June, 1938.

Under the provision of the municipal charter, the Commission is entrusted with the control and management of all public utilities owned, used or leased by the City and County. These include the San Francisco Water Department, the Hetch Hetchy Water and Power Projects, the San Francisco Municipal Railway, the San Francisco Airport. It also has jurisdiction over the fixing and changing of rates, fares and charges in connection with service rendered by the utilities. It also controls the matter of entering into contracts for supplying heat, light, and power for municipal purposes.

Included within the annual report, herewith submitted, are set forth the special reports rendered by the heads of the various departments having in charge, under the control and direction of the Commission, the separate utilities, and which reports give in detail the receipts and disbursements, the operating expenses, and the cost of extensions and improvements.

Important additions to the Water Department system have been completed during the year. Among these are the construction of the Palo Alto Pipe Line from Redwood City in San Mateo County, to Palo Alto in Santa Clara County at a cost of $213,620, and which pipe line will deliver water to Atherton, Palo Alto, Stanford University, and the Sunnyvale Air Base. A pipe line has also been constructed across the San Francisco-Oakland Bay Bridge to Yerba Buena Island, and a pumping station installed, which will supply pure mountain water to the Golden Gate International Exposition and to the Federal Government buildings on the Island.

March 25, 1938, the storage of water in the department reservoirs, located in San Mateo and Alameda counties, reached the unprecedented volume of approximately sixty-one billion gallons, sufficient to supply the needs of San Francisco for over three years, without renewal from additional rainfall or the necessity of drawing on the water stored in the Hetch Hetchy reservoir in the Sierra Nevada. The average daily consumption of water last year in San Francisco was approximately 58,276,000 gallons.

The Municipal Railway showed a marked increase in business during the last year, the operating revenue being $3,472,880, an increase of $308,828, or 9.76%, over the preceding year. The total number of passengers carried was 90,290,519. The net income for the fiscal year was $267,739. Prior to the Municipal Railway being placed under the jurisdiction of the Public Utilities Commission, its operation showed a yearly deficit, amounting at times to over Three Hundred Thousand Dollars, thus requiring a tax subsidy and a yearly tax burden on the property owners of San Francisco.

In the Hetch Hetchy water department, the enlargement of the O'Shaughnessy Dam was completed, the height thereof being increased 85½ feet, or to a total

height of 312 feet above stream level. The storage capacity behind the dam was increased 70% or to a total capacity of approximately one hundred and seventeen billion gallons of water, which is sufficient to supply the demands of San Francisco for a period of more than five years. This increased supply insures ample protection for the future needs of San Francisco, and increased revenue by permitting the operation of the Moccasin Creek Power Plant throughout the year thus bringing an additional revenue to San Francisco of approximately Two Hundred and Twenty-five Thousand Dollars per annum.

The storage of water in Hetch Hetchy and Lake Eleanor reservoirs, owing to the heavy snowfall in the mountains during last winter and the run off from the watershed in the spring, greatly aided in preventing disastrous floods along the Tuolumne River and in the San Joaquin Valley. This great dam is a permanent protection to the fertile fields lying below and a great blessing to the farmers in the San Joaquin Valley.

Important improvements have been made to the San Francisco Airport. During the fiscal year contracts were awarded for reclaiming three hundred acres of tidelands to the east of the landing field, doubling the size of the field and permitting the construction of additional runways of from 4,500 to 6,100 feet in length. The United States government has authorized the expenditure of $927,000 for the establishment of a U. S. Coast Guard flying base adjoining the seaplane harbor. The Pan American Airways has also entered into a lease with the Commission making "Treasure Island," on which the Golden Gate International Exposition is located, a permanent site for the landing of their Clipper Ships or Flying Boats, carrying mail and passengers on the Trans-Pacific air routes to Honolulu and the Orient.

The finely arranged and attractive Administration Building of the San Francisco Airport, erected at a cost of $160,000, furnished by the Federal Government, was dedicated in the month of October, 1937.

The street lighting service was increased by the addition of 802 lights during the year, there now being in use for the illumination of streets in the city 21,378 lamps. Since the Public Utilities Commission was given jurisdiction over this department in 1932, the cost of city lighting has been reduced from $1.28 per capita to 95 cents per capita.

It has been the aim of the Commission, in the operation of our public utilities, to carry on the work in an economical, wise, and business-like manner with the safety, convenience and well being of our citizens ever in mind.

The enlarged O'Shaughnessy Dam was dedicated on Sunday, October 16, 1938, in the presence of a large number of people from San Francisco and from other counties of the State of California. An account of the proceedings is set forth in this year's accompanying report.

Very respectfully yours,

President
Public Utilities Commission.

CONTENTS

Page

LETTER OF TRANSMITTAL v

ILLUSTRATIONS AND DIAGRAMS xiv

REPORT OF THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION 1
General 1
Water Department 1
Municipal Railway 2
Rapid Transit 3
Hetch Hetchy Construction 5
San Francisco Airport 5
Hetch Hetchy Power 6
Street Lighting 7
Commission Personnel 7
General Office 7
Utility Investment 7
Audits 8
Addendum, Dedication of O'Shaughnessy Dam 8
Address by Hon. Lewis F. Byington 8
Address by Hon. Angelo J. Rossi 13
Address by Kenneth A. Godwin 14

SAN FRANCISCO WATER DEPARTMENT 17
WATER PRODUCTION 18
Rainfall Catchment and Storage 18
Transmission 18
General Operation 19
Reservoirs 20
Pump Operation 22
Pipe Lines 23
Aqueducts 25
Meter Services 26
Alameda County Water District 26
Pleasanton Township County Water District 26
Retirement 27

CITY DISTRIBUTION DIVISION 27
Water Consumption 27
Operating Expenses 28
Transmission Mains 28
City Reservoirs 28
Lake Honda Screen House 28
Lake Merced 28
Pumping Stations 29
Meter Expense 29
City Pipe System 30
Street Department Expense 30
Service Connections 30
Machine Shop 30
Main Extension Contracts by the Department 30

CONTENTS—Continued

Page

WATER PURIFICATION DIVISION 31
Laboratory 31
Chlorination 31
Algae and Weed Control 33
Bacteriological Analyses, Sources of Supply and Treated Waters 34
Crenothrix 35
Training School 35
Typical Mineral Analyses of Water from the Several Sources 35
Report of Laboratory Examinations 36
Coagulation Studies 36
Cross Connections 37
Complaints 38
Gas Analyses 38
Soil Tests 39
Electrolysis 40
Corrosion 40
Hetch Hetchy Construction Camp Sanitation 42
General 42

WATER SALES DIVISION 42

ENGINEERING 44
Contracts Let Under 1933 Bond Issue—PWA Docket 1510 45
Crystal Springs-University Mound Pipe Line No. 2 45
University Mound Reservoir Addition 46
Sunset Reservoir and Connecting Pipes 47
Contracts Let Under 1935 PWA Grant—Docket 1132 47
Contracts for Normal Additions and Betterments 48
Additions to City Distributing System 48
Additions to Supply and Transmission Facilities 51
Miscellaneous 52

AGRICULTURAL DIVISION 53
Summary (holdings and leases) 54
Share Crops 56
Use of Lands Not Leased 56
Walnut Orchard 57
Crop and Value During City Ownership 57
Care of the Orchard 58
Fencing and Boundary Lines 59
Care of Properties 59

ACCOUNTING AND AUDITING 59
Comments on Financial Statements 60
General Balance Sheet 60
Income Statement 61
Balance Sheet—June 30, 1938 63
Income Account 64
Surplus Account 65
Composition of Surplus 65
Statement of Operating Expenses 66
Fixed Capital in Service 67

CONTENTS—Continued

Page

Fixed Capital Under Construction 67
Fixed Capital in Service—PWA Projects 68
Cash and Outstanding Warrants 70
Summary of Interfund Accounts 70
Schedule of Bonded Indebtedness 71
Operating Expenses 72–81
Additions and Betterments 82

APPENDIX TO REPORT, SAN FRANCISCO WATER DEPARTMENT. 84
Rainfall by Months—San Francisco 85
Seasonal Rainfall—Watershed Stations 85
Storage in Million Gallons 85
Water Drawn from Hetch Hetchy and Auxiliary Sources 86
Seasonal Draft on Surface Storage and Auxiliary Sources 86
Consumption in Million Gallons per Day 87
Average Daily Consumption Since 1865 87
Delivery Through Pipe Lines in Million Gallons Daily 87
Source of Water Transported Across San Francisco Bay 87
Comparative Pumping Station Costs 88
Average Daily Consumption by Districts 88
Peak Consumption by Districts 89
Unit Cost for Meter Maintenance 89
Unit Cost of Meter Installation 89
Unit Cost of Service Connection 89
Pipe Record for Fiscal Year 90
Valve Record 91
Current Contract Data 92
Gross Metered Service Revenues, etc. 94
Charges of Non-Paying Municipal Accounts 95
Charges of Paying Municipal Accounts 96
Meters Installed—San Francisco District 96
Meters Installed—Suburban District 96
Street Main Taps and Service Connections Record 97
Service Connections 97
Service Installations 98
Automatic Sprinkler Installations 98
Official Meter Tests 98
Record of Bad Water Complaints 99
Record of No Water Complaints 99
Record of Building Permits 100
Number of Building Permits 100
Number of Contractors' Jobs Handled by the Builders' and Contractors' Supply Section 100
Returns and Expenses—Agricultural Division 101
Organization and Personnel 102

HETCH HETCHY WATER SUPPLY CONSTRUCTION AND OPERATION 105
Organization and Personnel 106
Publicity and Visitors 106
Relations with U. S. Department of the Interior 107
Hydrography 107
Precipitation 108
Tuolumne River Discharge 109

CONTENTS—Continued

Page

Water Litigation 110
Hetch Hetchy Railroad 110
Watersheds and Impounding Reservoirs 111
Quarters at O'Shaughnessy Dam Camp 112
Quarters at Lake Eleanor 113
O'Shaughnessy Dam 114
Enlargement of O'Shaughnessy Dam 118
Lower Cherry Aqueduct 119
Main Aqueduct, Mountain Division 120
Main Aqueduct, Moccasin Division 121
Main Aqueduct, Foothill Division 122
Main Aqueduct, San Joaquin Division 123
Main Aqueduct, Coast Range Division 123
Main Aqueduct, Bay Crossing Division 125
Main Aqueduct, Peninsula Division 125
Construction for the Water Department 126

CONSTRUCTION FOR YERBA BUENA AIRPORT AND GOLDEN GATE INTERNATIONAL EXPOSITION 127

CONSTRUCTION FOR SAN FRANCISCO AIRPORT 131
Current Contract Data 132
Balance Sheet—June 30, 1938 133
Comparative Operating Statement 134
Surplus Account 135
Composition of Surplus 135
Fixed Capital in Service 136–137
Fixed Capital Under Construction 136–137
Detail of Funds, Bonded Debt and Warrants Outstanding 138
Detail of Interfund Balances 139
Account 1000—Fixed Capital in Service 140
Gross Additions 142
Hetch Hetchy Railroad Investment 143
Expenditures 144–146
Reserve of San Francisco Water Department and Hetch Hetchy Power Operating Advances for Commitments 147–148
Consolidated Balance Sheet 149
1933 Hetch Hetchy Dam Bond Fund, Bond Interest and Bond Redemption Fund—Statement of Receipts, Expenditures and Balances 150–151
Consolidated Comparative Income Statement 152
Consolidated Surplus Account 153
Statement of Annual Bond Redemption by Fiscal Years 154–155
Statement of Annual Bond Interest by Fiscal Years 156–157
Automotive Equipment Operations—Costs and Credits 158–159

ELECTRIC POWER BUREAU 161

HETCH HETCHY POWER OPERATION 161
Reservoirs 161
Early Intake Power House 163
Moccasin Power House 163
Transmission Lines 165
Power Production 165
Report of Power Production 165

CONTENTS—Continued

Page

Power Disposal 165
Comparative Income Statement 166
Surplus Account 167
Composition of Surplus 168
Balance Sheet—June 30, 1938 169
Detail of Operating Expenses 170
Account 1000—Fixed Capital in Service 171
Comparative Income Statement 172

LIGHTING OF STREETS AND PUBLIC BUILDINGS 173
Gas and Electric Supply 173
Comparison of Estimated and Actual Revenues 174

DEPARTMENTAL GAS AND ELECTRICITY 176
Consumption and Expenditures 176
Purchase of Electricity by Schedules 177
Purchase of Gas by Schedules 178
Street Lighting 179
Cost of Street Lighting Operation 180
Tabulation of Street Lighting Expenditures 180
New City-Owned Street Light Construction Completed During 1937-1938 181
Conduit Installations for Street Lighting 183
New Street Lighting Planned and Ordered Installed 183
Administration 185
Electrolysis Survey of High Pressure Auxiliary Water Supply 185
Percentage of Kilowatt Hours Purchased at Various Average Costs 186
Percentage of Dollars Spent for Electricity at Various Average Costs 186

MASS TRANSPORTATION 186

MUNICIPAL RAILWAY ENGINEERING 188

BRIDGE TERMINAL TRACKS 190

SAN FRANCISCO AIRPORT 193
Foreword 193
Airport Bond Issue Approved by Voters 193
Field Enlargement Under Way 194
New Administration Building Dedicated 195
Power Boat Added to Airport Equipment 195
TWA Establishes Base at San Francisco Airport 196
Pan American Airways to Base at Treasure Island 197

NATIONAL AERONAUTICAL PROGRESS 197
Civic Aeronautics Authority 198
Summary of Progress of Civil Aeronautics 199
New Flying Era 199
Douglas DC4 200
Boeing Stratoliner 201

TRANSPORT TRAFFIC 201
Traffic Figures at San Francisco Airport 201
Operations of United Air Lines and Transcontinental & Western Air at San Francisco Airport 203

CONTENTS—Continued

Page

PRIVATE FLYING 204
Bureau of Air Commerce Establishes "Private Flying Section" 204
Production of Smaller Planes Increases 205

LOCAL FLYING 205
Planes for Private Use 205
Distinguished Private Flyer Based at San Francisco Airport 205
Flying Schools 206
Aircraft Agencies 206
Charter Trips and Scenic Flights 207
Flying Club 207
Skywriter 207

OTHER TENANTS 207
United Air Lines 207
TWA, Incorporated 207
Pacific Airmotive Corporation 207
Airdrome Transport 208
Coffee Shop and Refreshments 208
Oil Companies and Mechanics 208

ENGINEERING AND CONSTRUCTION WORK 208
Construction Progress at San Francisco Airport 208
Contract 39—Earth and Rock Fill 209
Contract 41—Finishing Office Rooms, etc., Administration Building (PWA Project 1132-10E(R) 209
Contract 42—Finishing Rooms in the First Story of Administration Building (PWA Project 1132-10F(R) 209
Current Contract and Project Data 210–211
Lease for Coffee Shop, Refreshment Room, etc 212
Radio and Public Address System 212
Administration Building Equipment 212
Emergency Boat 214
Works Progress Administration Project 6683 214
1938 Airport Bonds 216
Works Project Administration Project 8718 217
Contract No. 43—Exploration and Dredging 217
Contract No. 44—Earth and Rock Fill 218
Contract No. 45—Dredging Channel for Levee 218
P. W. A. Project 218
Coast Guard Station 219
Engineering Work 219

TRAFFIC CONTROL TOWER 219
Communication from the Department of Commerce 220
Control Tower Operation 221

WEATHER DEPARTMENT 221
Weather Information Available 222
Radiometerograph Observations 222

SAFETY 223

AIRPORT PERSONNEL 223

CONTENTS—Continued

Page

EVENTS 224
Program Honors TWA 224
Administration Building Formally Dedicated 224

WEATHER DATA 225

FINANCIAL 226
Balance Sheet—June 30, 1938 226
Income Account 227
Surplus Account 228

MUNICIPAL RAILWAY OF SAN FRANCISCO 231
General 231
Twenty-five and One-Half Years' Operation 234
Auditing and Accounting 234
Maintenance of Track and Roadway 235
New Construction 235
Reconstruction and Replacements 235
Reconstruction of Market Street Tracks—Geary to Sansome Streets 235
Track Replacement Jobs 236
Transportation 236
Maintenance of Equipment 237
Bureau of Claims 237
Accidents 238
Comparative Statement of Accident Reports 239
Court Statistics 239

COMMENTS ON FINANCIAL STATEMENT 241
General Balance Sheet 241
Cash with the Treasurer 241
Balance Sheet—June 30, 1938 246
Comparative Income Statement 247
Reserve Funds of the Municipal Railway 248
Comparison of Budget with Actual Receipts and Expenditures 249
Intrafund Accounts 250
Interfund Accounts Payable 250
Schedule of Road and Equipment 252
Analysis Reserve for Depreciation 253
Field Operating Statement 254
Comparative Operating Receipts Statement 255
Summary of Income and Outlay 256
Statement of Bus Line Operations 258
Comparative Statement Data 260
Cost Statement—Itemized Accounts 261
Cost Statement—Itemized Accounts—Bus Operations 263
Annual Report of Bureau of Claims 265
Comparative Statement of Complaints and Commendations 266
Comparative Statement of Bad Order Cars Turned In 266
Bus Routes in Operation 267
Mileage—Single Track 267
Miles, Routes and Route Mileage 268
Chronology 269

ILLUSTRATIONS AND DIAGRAMS

Page

O'Shaughnessy Dam ..... Frontispiece
Public Utilities Commissioners and Department Heads xvi
Public Utilities Commission Organization Chart 4
Dedication of O'Shaughnessy Dam 10
Pulgas Water Temple 16
N. A. Eckart, General Manager and Chief Engineer, San Francisco Water Department 17
Crystal Springs Reservoir 19
New Crystal Springs Pipe Line 20
Pilarcitos Spillway 22
Pilarcitos Spillway—Entrance Structure 24
Rainfall Chart 25
Sunset Pipe Line 27
Sunset Reservoir 29
Pulgas Temple 32
Chart—Calaveras Reservoir—Seasonal Distribution of Microscopic Organisms 33
Chart—Lower Crystal Springs Reservoir—Seasonal Distribution of Microscopic Organisms 37
Chart—Daily Average Consumption by Years 38
Stone Dam Aqueduct 39
Chart—Water Sales Net Charges 41
Chart—Water Deliveries at Consumers' Meters 43
Chart—Active Consumers 43
Bay Bridge Pipe Line 46
Bay Bridge Pump Station 48
Palo Alto Pipe Line 50
Palo Alto Pipe Line—showing Steel Bents on Concrete Piers 52
Golden Gate International Exposition—Treasure Island 104
L. T. McAfee, Chief Engineer and Manager, Hetch Hetchy Water Supply 105
O'Shaughnessy Dam Cottage 107
Flooded Agricultural Land, San Joaquin Valley 111
Upstream Face, O'Shaughnessy Dam 113
O'Shaughnessy Dam Construction—South Abutment 115
O'Shaughnessy Dam Construction—Spillway 117
O'Shaughnessy Dam—Reservoir and Downstream Face 120
High Scalers, O'Shaughnessy Dam 128
Yerba Buena Reservoir 130
O'Shaughnessy Dam Spillway 160
Paul J. Ost, Chief Electrical Engineer 161
Stockton Street Tunnel—Night View 163
Lighting Standards Used Downtown 164
Lighting Standards Used on Boulevards 174
Lighting Standards Used in Residential Districts 175

ILLUSTRATIONS AND DIAGRAMS—Continued

Page

Pendant Lighting for Secondary Streets 179
Bracket Lights Mounted on Trolley Poles along Thoroughfares 181
Chart—Street Lighting 182
Chart—Installation of New Lights by Districts 184
Chart—Municipal Expenditures for Gas, Electricity and Street Lighting ... 185
Chart—Division of Annual Expenditures for Gas and Electricity by Functions 187
Chart—Division of Annual Expenditures by Departments—Other than Public Utilities 189
San Francisco Airport Development 192
B. M. Doolin, Manager, San Francisco Airport 193
Administration Building 194
Airport Coffee Shop 196
Passenger Terminal 198
Treasure Island Airport 200
Administration Building—Treasure Island 202
Hangars—Treasure Island 204
Emergency Boat 206
Modern Transport Plane 213
Windrose—San Francisco Airport 222
Organization Chart—Municipal Railway of San Francisco 230
Fred Boeken, Manager, Municipal Railway 231
Modern Buses 232
Nickels Count by Automatic Machines 233
Armature Repairs 235
Courtesy and Safety 237
Chart—Mass Transportation Passengers Entering and Leaving Central Business District—Municipal Railway 238
Chart—Analysis of Accidents—Municipal Railway 240
Chart—Accident Comparison by Classification—Municipal Railway 240
Chart—Average Daily Travel by Months—Municipal Railway 249
Chart—Average Travel by Days of the Week—Municipal Railway 251
Chart—Total Travel by Fiscal Years—Municipal Railway 251
Chart—Daily Revenue and Operating Expenses 260

PUBLIC UTILITIES COMMISSIONERS AND DEPARTMENT HEADS

Front row, left to right: Fred Boeken, William H. Scott, John J. Sharon, L. T. McAfee, Nelson A. Eckart, Paul J. Ost, B. M. Doolin, Jackson T. Carle; second row, seated: Commissioners John P. McLaughlin, John H. McCallum, President Lewis F. Byington, Vice President George Filmer, Commissioner John P. Murphy; standing: A. F. Freitas, F. B. Gibbon, Secretary of the Commission, and Edward G. Cahill, Manager of Utilities.

REPORT OF THE SAN FRANCISCO PUBLIC UTILITIES COMMISSION

General:

Enjoying their most successful and prosperous period under Public Utilities Commission management, San Francisco's municipally-owned utilities made new records of achievement during the fiscal year ended June 30, 1938.

Increased revenues made possible improvements of service to the public in all departments of the utilities organization.

Extensive programs of new construction were substantially completed. Operation of these units will insure reliability of water, transportation and airport service to the citizens of San Francisco.

New reductions in water rates brought direct benefit to the larger industrial and commercial consumers, and indirectly to the entire city.

The City's Peninsula market for surplus water was greatly enlarged by construction of new transmission mains.

The Municipal Railway increased its street car service and continued to operate with a five-cent fare and free transfers.

Enlargement of O'Shaughnessy Dam to its ultimate height was completed.

Water Department:

On January 1, 1938, the Public Utilities Commission established a schedule of lowered rates providing substantial savings for the larger commercial and industrial consumers and for water wholesaled to Peninsula communities. This reduction was the fourth ordered by the Commission during the six years of operation by the Public Utilities Commission. The new rates are substantially the same as those established on January 1, 1937, except that they apply to all water utilized by the consumer whereas the prior rate schedule provided reductions only for the amount of water used in excess of that served the consumer during the prior year.

Although these new rates were in effect only for half of the fiscal year, they resulted in a saving of $169,213 to consumers. Of perhaps more importance than this saving is the fact that the reduced rates undoubtedly will attract many large new payroll industries to San Francisco, resulting in substantial benefits to the entire community.

Revenue from sales of water for the fiscal year amounted to $6,859,793, an increase of $37,734 over the previous year. This increase in water sales revenue, despite the rate reduction referred to, is direct evidence of the stimulus to water consumption resulting from it.

Operating expenses amounted to $2,817,647, an increase of $135,532 over the expenses of the prior year. This increase was due largely to increased provision for depreciation and to increases in property taxes paid by the Water Department to other counties.

After payment of bond interest and all other expenses, the net income of the Department for the year was $2,426,555.45, a decrease of $158,837.14 from the total net income for the year ended June 30, 1937. Of this amount $1,734,330 was

turned over to the City's General Fund to reduce taxes. In addition to this contribution to the General Fund, the Water Department supplied other municipal departments, free of charge, with water which would have cost $438,822 at prevailing rates. This is in excess of the amount of taxes which would have been paid to the City by the water system if it had been privately owned.

Up to the end of the fiscal year a total of $7,839,440 had been contributed to the City's general fund by the Water Department since its organization in 1930.

A winter of ample rainfall, together with prior delivery of water from Hetch Hetchy, resulted in all of the City's storage reservoirs being filled to capacity. For the first time since 1911 water flowed over the Crystal Springs Reservoir spillway and for the first time since its completion in 1924 Calaveras Reservoir spilled.

Average daily consumption of water was 58,276,121 gallons, four-tenths of one per cent less than the previous year. Consumption within the City boundaries decreased 3.2% but increase in suburban use brought the daily average almost up to the prior year.

On March 25, 1938, storage in the Department's reservoirs reached an all-time peak of 60,910 million gallons. This storage is sufficient to supply the City for more than three years without additional rainfall and without drawing on the Hetch Hetchy storage.

During the year contracts for the new Crystal Springs Pipe Line, the University Mound and Sunset Reservoir, were completed, finishing the $12,095,000 bond issue program voted for the Water Department in 1933. Completion of these units not only will insure a reliable and ample flow of water from Peninsula storage reservoirs into the City, but will guarantee a seven-day supply in distribution reservoirs within the City limits in the event of any interruption of flow from storage sources.

Major additions to the Water Department system substantially completed during the year were the laying of the new Palo Alto Pipe Line, approximately five miles in length from Redwood City to Palo Alto, at a cost of $213,620, and the construction of a pumping station and pipe line across the Bay Bridge to supply water to the Golden Gate International Exposition and Yerba Buena Island. The Palo Alto Pipe Line will deliver San Francisco water to Atherton, Palo Alto, Stanford University and Sunnyvale air base. Contract with the City of Palo Alto provides for repayment of the cost of the line over a period of years through a sur-charge on water delivered.

Municipal Railway:

An exceptional increase in business marked operation of the Municipal Railway during the year.

This was due in large part to two increases in fare charged by the larger of the two privately owned street railway companies operating in San Francisco. Effective July 6, 1937, the California State Railroad Commission granted the Market Street Railway Company permission to make a charge of two cents for transfers in addition to its regular five-cent fare. On May 29, 1938, the Commission authorized a fare of seven cents in cash or four tokens for twenty-five cents, with a free transfer.

These changes in rate structure of the privately owned system resulted in a substantial increase in passengers carried by municipal cars, which have continued with a five-cent fare and free transfers. The increase in business was particularly noticeable on lines where the two systems compete.

Operating revenue for the year was $3,472,880, an increase of $308,828, or 9.76% over the preceding year. Operating expenses, not including reserves or bond interest, amounted to $2,930,147, an increase of $216,234, or 7.97% over the previous year. This increase in expense was accounted for by the increased number of cars operated to care for the heavier traffic and by the inauguration of a policy of giving leaves of absence with pay in cases of illness of per diem employees. Net income for the fiscal year was $267,739, as compared with a net income of $179,729 in the prior year.

A total of 46,904 car hours were operated in excess of those operated in the fiscal year 1936-1937 to care for increased traffic.

With passenger revenues averaging more than 20% higher than the preceding year and the prospects of further increased business as the result of the Golden Gate International Exposition in 1939, it seemed probable that net income during the coming year will make possible the purchase of buses to enable the Public Utilities Commission to extend feeder routes to districts of the City now badly in need of transportation.

On January 1, 1938, Bus Route No. 5, in the Marina district, was extended one block so as to operate over Broderick Street instead of Divisadero Street, while on May 8, 1938, Bus Route No. 6, known as the Eureka-Diamond route, was extended four blocks from Diamond and Clipper streets to Diamond and Duncan streets. Extension of the "L" line to Fleishhacker Playfield was completed and the new section placed in operation shortly after the beginning of the fiscal year.

Cars and busses operated a total of 9,212,687 miles during the year. This was an increase of 5.12% over the previous year. A total of 90,290,519 passengers were carried. This was an increase of 11.81%.

Tracks, paving and equipment were well maintained and six new buses, costing $60,000, were purchased to replace worn out equipment.

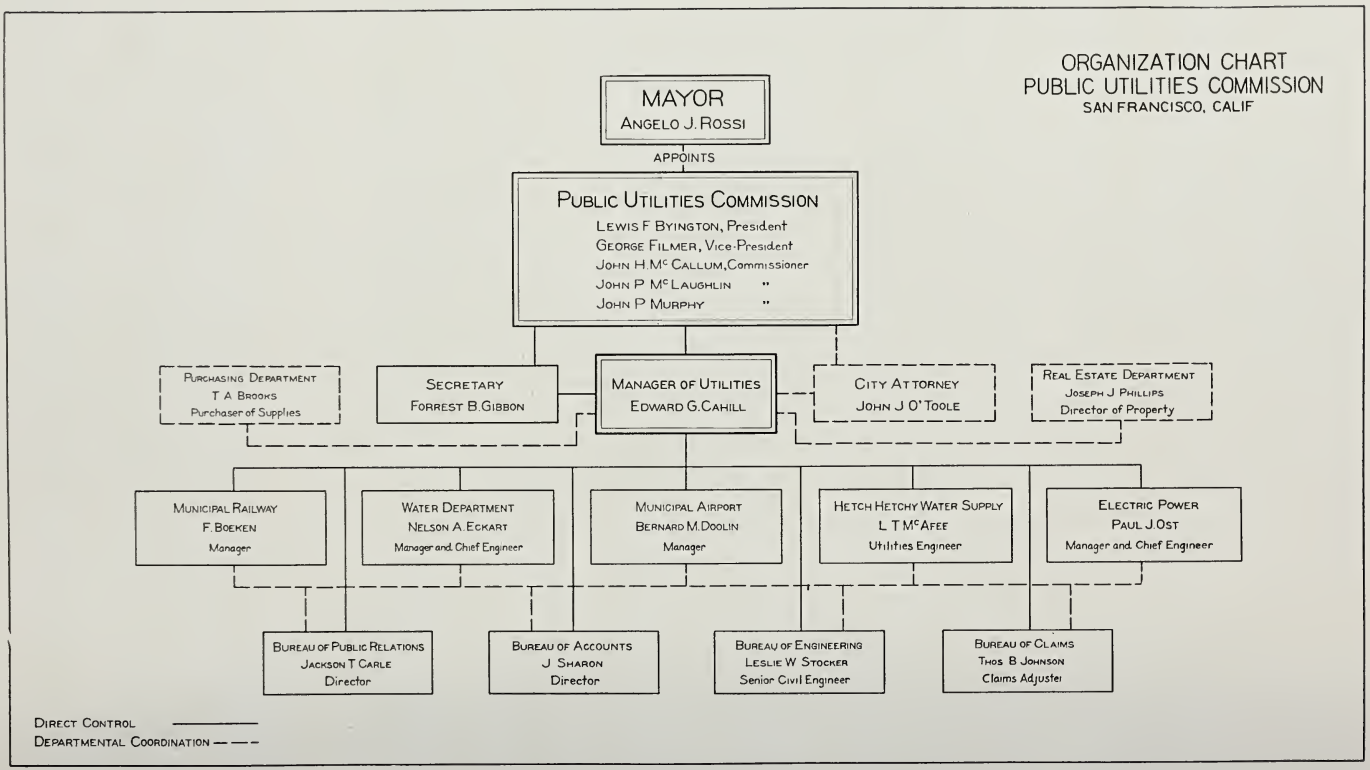
An appropriation of $155,000 from Municipal Railway funds was provided to build tracks for a loop connecting with the street railway tracks on Market Street via First and Fremont streets. An agreement entered into with the Market Street Railway Company provides for repayment of one-half of the cost of construction over a ten-year period. The tracks will be used jointly by both systems when rail operation starts on the Bay Bridge.

Rapid Transit:

The rapid transit plan submitted by the Public Utilities Commission to the Board of Supervisors in May, 1936, which was supplemented by a further report in May, 1937, was placed before the voters at the election of November 2, 1937. The proposal, which called for the issuance of $49,250,000 in bonds for construction of subways under Market, Geary and Mission streets and for feeder bus service throughout the City, was defeated by a vote of 95,246 opposed to 68,834 in favor.

One of the arguments presented against the plan with great vigor was that the City should acquire the Market Street Railway system and combine it with the

ORGANIZATION CHART
PUBLIC UTILITIES COMMISSION
SAN FRANCISCO, CALIF



municipal system before attempting a rapid transit program. On July 5, 1938, the Board of Supervisors requested the Manager of Utilities to enter into negotiations with the Market Street Railway for the purpose of determining a price which the company would be willing to accept for its properties. These negotiations are under way.

Meanwhile mass transportation conditions have grown steadily worse with increasing traffic congestion in the downtown area. Inability of street cars to maintain schedules during peak periods of travel, slowness of operation and the necessity for switching back many cars before they reach the terminals of the lines, together with overcrowding of existing facilities of the Municipal Railway, have been the occasion for many complaints from citizens.

Hetch Hetchy Construction:

Enlargement of O'Shaughnessy Dam to its ultimate height of 312 feet above stream level was completed at the close of the fiscal year.

The work included placing of concrete on the down-stream face of the dam from the foundation level to its old crest and heightening of the entire structure by 85½ feet, at a total cost of approximately $4,000,000.

Storage of water behind the dam was increased 70% by the enlargement, so that Hetch Hetchy Reservoir now has a capacity of 117,300 million gallons. This increased capacity not only will insure an uninterrupted supply of water for San Francisco for many years to come, but will also provide immediate revenue by permitting operation of Moccasin Power Plant at full capacity throughout each year. It is estimated that the City will receive an average annual income of $225,000 in excess of that heretofore realized from the sale of power.

Unusually heavy rainfall for the season of 1937-1938 resulted in the filling of the enlarged reservoir almost immediately following its completion.

It is interesting to note that the storage of water in the City's reservoirs at Hetch Hetchy and Lake Eleanor contributed materially toward preventing heavy floods along the Tuolumne River in the San Joaquin Valley, such as were experienced on other similar Sierra streams lacking adequate storage facilities.

Other construction in connection with the Hetch Hetchy project included the building of nine additional cottages for employees at Moccasin power plant and Priest Reservoir and the construction of an ornamental water temple of Greco-Roman design at the outfall of Pulgas Tunnel in San Mateo County. This temple contributes an unusually attractive setting for the terminal of the 155-mile Hetch Hetchy aqueduct.

San Francisco Airport:

Development of San Francisco Airport as one of the world's major air terminals was assured at the election of November 2, 1937, when voters overwhelmingly approved a bond issue of $2,850,000 for completion of the landplane airport and construction of a seaplane base. The bond issue carried by a vote of 108,573 to 46,683.

As the fiscal year closed, contracts were awarded for reclamation of a 300-acre tideland area along the eastern boundary of the present landing field. Completion

of this project will more than double the size of the landing area and will permit runways from 4,500 feet to 6,100 feet in length. Material for the reclamation will be obtained from airport-owned lands to the north and the excavation will form a harbor and channel for seaplane use.

The Congress of the United States has authorized appropriation of $927,000 for establishment of a United States Coast Guard flying base adjacent to the seaplane harbor.

Continuance of San Francisco as the permanent base for the trans-Pacific route of Pan American Airways, was assured by the agreement of that company to enter into a lease with the City for use of hangars, administration building and other facilities at the "Treasure Island" Exposition site following the close of the Golden Gate International Exposition. A building program of approximately $500,000 for shops, ramps and quarters will be inaugurated immediately by Pan American Airways to provide complete facilities necessary to the operation of a major seaplane base. The lease is for a period of ten years with an option for renewal for an additional like period.

On September 5, 1937, a new transcontinental air route between San Francisco and major eastern cities was inaugurated by Transcontinental and Western Air, Inc., one of the world's major air lines. Establishing its base at San Francisco Airport, T. W. A. began service to New York via Los Vegas, Boulder City and Albuquerque. San Francisco is thus directly linked with eastern cities by two major air routes. Inauguration of the new service was commemorated with appropriate ceremonies at the airport.

In October, 1937, the airport's new $160,000 Administration Building was formally dedicated. In addition to the airport's administrative offices, the new building houses complete facilities for the use of air transport companies and for the handling of mail, express and other cargo, as well as weather bureau and traffic control equipment.

Negotiations were under way at the close of the fiscal year for installation of a radio range station adjacent to the airport and for a blind landing beam on the long runway. Addition of these facilities to the airport's equipment will insure safe operation under adverse weather conditions. A considerable number of transport flights to San Francisco Airport have heretofore been cancelled under Civil Aeronautics Authority rules, because of the lack of this equipment.

A new high-speed power boat, 35 feet in length, was added to the airport equipment during the year. It is capable of carrying more than 40 people and has a top speed of 25 to 30 miles an hour.

The airport continued to maintain its excellent safety record. No accidents involving injury occurred during the year.

Hetch Hetchy Power:

On June 28, 1938, the Federal District Court decided in favor of the Government in the suit brought by the Secretary of the Interior to enjoin the City from continuing to deliver Hetch Hetchy power to the Pacific Gas and Electric Company under the agency contract entered into in 1925. It is the contention of the Secretary of the Interior that the contract does not comply with the requirements of the Raker Act, placing restrictions on the disposal of Hetch Hetchy electricity. The Court allowed San Francisco six months, or until December 28, 1938, to re-

arrange its electric power business in such a way as to comply with its interpretation of the requirements of the Act. As an appeal is planned in the case by the City Attorney, it is expected that further time will be given for final settlement of the litigation before an injunction is made effective.

Heavy rainfall for the 1937-1938 season insured continuous operation of the City's power plants at full capacity during the coming year.

Installation of new water turbine buckets and nozzles at Moccasin power house increased the power output by approximately 4%.

Street Lighting:

A total of $711,737 was expended during the year for the lighting of 21,378 lamps. The street lighting cost per capita was 95 cents, as contrasted with a cost of $1.28 per capita when the Public Utilities Commission assumed jurisdiction over this department in 1932. The number of lights in service showed a net increase of 802 during the year.

The first City installation of the new type sodium vapor lamp was made in the Stockton Street tunnel in connection with the renovation of this structure. The installation has proven a marked success in appearance and safety.

It is interesting to note that the cost of administration of the street lighting system, together with supervision of all of the City's gas and electric supply, is but 1.3% of the total cost.

Commission Personnel:

The term of Commissioner John H. McCallum expired on January 15, 1938. Commissioner McCallum was immediately reappointed by Mayor Angelo J. Rossi for a new four-year term.

At its first meeting in 1938 the Commission unanimously reelected President Lewis F. Byington and Vice-President George Filmer to serve their seventh consecutive one-year terms in these positions. Both commissioners have served respectively as president and vice-president of the Commission since its organization on January 8, 1932.

General Office:

The Public Utilities Commission held 34 regular, adjourned and special meetings during the fiscal year. The Commission adopted 649 resolutions and awarded 48 contracts for work costing $2,053,313. Contract payments during the year amounted to $5,787,090. A total of 58 contracts were approved as completed during the year and 53 parcels of City property under the Commission's jurisdiction were leased to the highest bidders.

Utility Investment:

As of June 30, 1938, after deducting increased reserves for depreciation, a consolidated balance sheet shows a total investment of $174,237,760 in the City's municipal utility enterprises.

All bonded interest and redemption charges of the utilities were fully and promptly paid. Reserve funds were provided in cash.

Audits:

Books and accounts of the various utilities under the jurisdiction of the Public Utilities Commission are audited annually by certified public accountants under the direction of the Controller of the City and County. In addition to these annual audits, the accounting bureau of the Commission and the Controller maintain a constant surveillance over the budgetary and bond expenditures of the utilities.

ADDENDUM

Dedication of O'Shaughnessy Dam

After the close of the fiscal year 1937-1938, but prior to publication of this report, the enlarged O'Shaughnessy Dam was dedicated with appropriate ceremonies held on the crest of the structure Sunday, October 16, 1938. More than 250 officials of the Federal, State and City governments participated in the exercises, which were broadcast by nation-wide radio networks.

President Lewis F. Byington of the Public Utilities Commission acted as chairman of the day. Addresses were delivered by Honorable Angelo J. Rossi, Mayor of San Francisco, and Honorable Kenneth A. Godwin, Regional Director, Federal Administration of Public Works, prior to the unveiling of a commemorative bronze plaque set into the crest of the dam. The addresses delivered on this occasion, which so well express the feeling of the people of San Francisco upon completion of this monumental engineering structure, were as follows:

HON. LEWIS F. BYINGTON

President, Public Utilities Commission and Chairman of the Day

Fellow Countrymen:

As I awakened this morning and looked out over this marvelous panorama of lake and falls, of rugged cliffs and glorious mountain ranges, of deep blue sky and purpled canyons, and beheld the beauty of the dawn, the lines of the poet, descriptive of California, came to me:

Morn breaks again in splendor
O'er the giant, new-born West,
But of all the lands God fashioned,
'Tis this land is the best.

Sun and dews that kiss it,
Balmy winds that blow,
The stars in clustered diadems
Upon its peaks of snow;

The mighty mountains o'er it,
Below the white seas swirled—
Just California stretching down
The middle of the world.

This gathering today, high up in the majestic Sierra Nevada, is to mark the completion of the great O'Shaughnessy Dam, the store house, I may say, of the life-giving waters which gush forth from the eternal snows of the higher peaks and the ravines, to enrich the soil and make glad the cities of California.

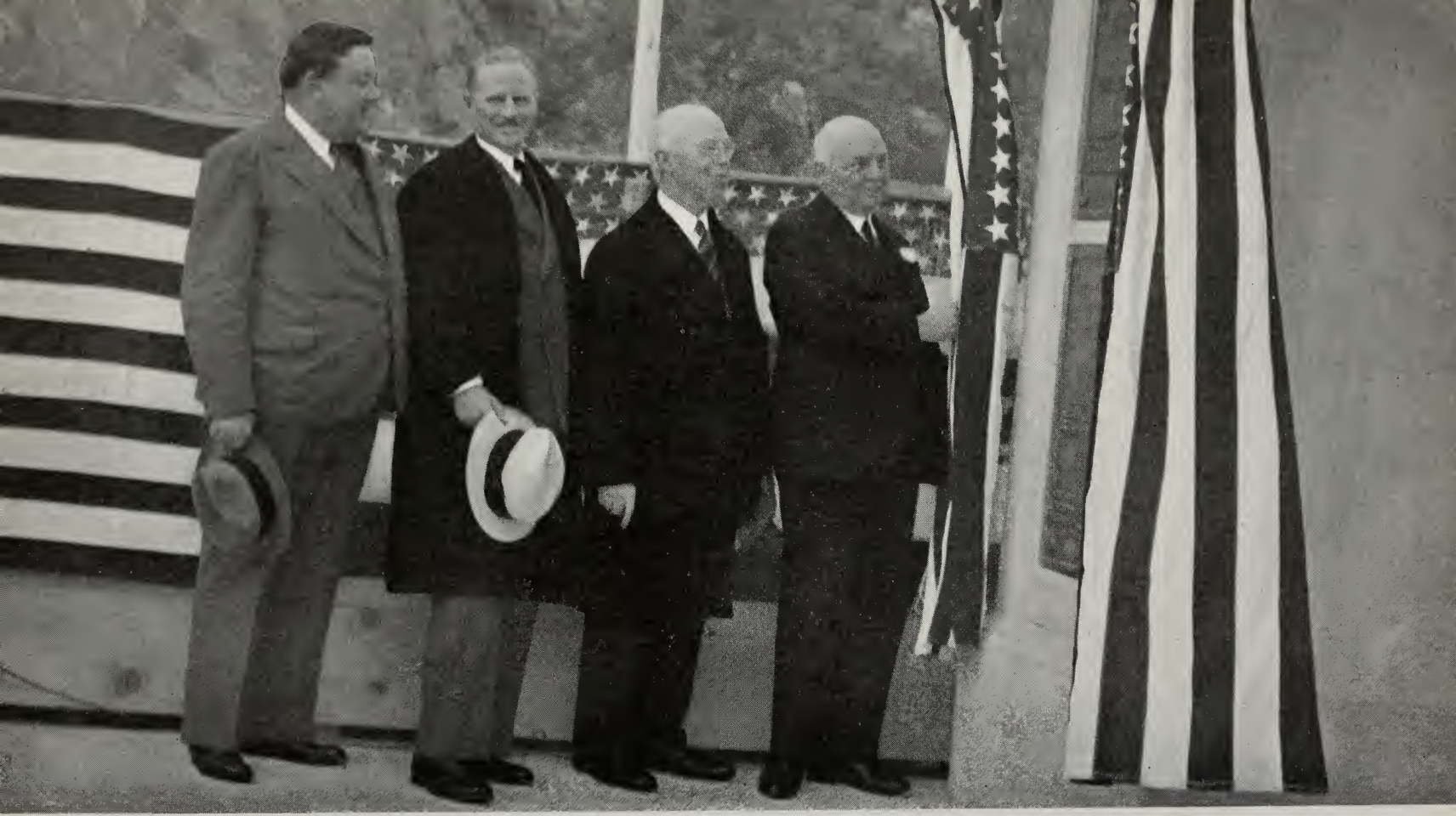
As President of the Public Utilities Commission of San Francisco, and speaking for its members, I voice the gratification we feel at the completion of this most important project.

I am standing at the crest of this marvelous dam, at an elevation of 3,800 feet above the sea, and surrounded by granite walls of matchless beauty and wonder, down which in spring time, for a thousand feet, leap rainbow falls of dashing spray. Confined by the great dam, between the tall cliffs of the Tuolumne River Canyon, is a far spread lake of purest water, a mile and a half in width and extending back for eight miles through a royal, winding gorge, into the very heart of the Sierra Nevada. Truly may it be said that this is God's gift to the people of San Francisco, the farmers of our valleys and to the State of California.

It was said at one time that the construction of this dam might mar the charm and beauty of the Hetch Hetchy Valley, which in grandeur rivalled the famed Yosemite, lying but a few miles to the southeast of us. But this spot has taken on new charms. Here still stand the sheer, matchless cliffs, "rock-ribbed and ancient as the sun"; the falls unsurpassed in loveliness still leap from dizzy heights and melt away in spray, while the beauty of all is reflected in this broad expanding lake of unsurpassed purity and clearness. Chief Engineer O'Shaughnessy, and those who worked with him and are still in the service of San Francisco, have shown that engineering accomplishment may be carried forward with an eye to beauty and art as well as to the public welfare of a community. We point with pride to the wonderful bridges which span San Francisco Bay and to this lake that reflects the glory of the sun and stars and gives us our wealth of waters. All our people should come to visit it and marvel at its beauty and its usefulness to mankind.

We witness today the completion of one of the greatest engineering achievements in the history of our country. Over thirty years have passed since the City Engineer recommended the Tuolumne River as the source of a water supply for the City and County of San Francisco. Men of broad vision anticipated the future needs of this Bay region, and American engineers, of matchless skill and courage, have built for the future needs of a wonderful city. San Francisco has now the finest water system on the American continent, an inexhaustible supply from snow capped, distant peaks, lying within the Yosemite National Reservation. It will forever be the greatest asset of the city with its ever growing population and countless industries. Many raised doubts as to the completion of the splendid Hetch Hetchy water system, but all doubts are now dispelled and the work is accomplished.

We recall today the little Spanish village, Yerba Buena, of the period before the discovery of gold in California and how it grew into the great City of San Francisco, stretching over the hills and around the Bay. With its growth the water system expanded. In the earliest days the supply was from small, scattered springs; then water was brought on barges across the Bay from the hills of Sausalito and sold from carts, later it was conducted to the city from Lobos Creek on the Presidio Reservation. Looking to the future growth of San Francisco, the Spring Valley Water Company turned its attention to the wooded hills and ravines of San Mateo County and brought the water from Pilarcitos Creek, and later built the Crystal Springs dams in the San Andres Valley.



DEDICATION OF O'SHAUGHNESSY DAM

On October 16, 1938, more than 250 city, state and federal officials participated in ceremonies dedicating the enlarged O'Shaughnessy Dam. View shows, left to right: L. T. McAfee, Utilities Engineer; Kenneth A. Godwin, Regional Director, Federal Administration of Public Works, President Lewis F. Byington of the San Francisco Public Utilities Commission, and Mayor Angelo J. Rossi. Mayor Rossi unveils commemorative plaque.

Eventually it became necessary for San Francisco to consider the future needs of a greater city when the water resources of the Peninsula should become exhausted. Seeking an inexhaustible supply, engineers turned toward the Sierra Nevada range of mountains. The United States Geological Survey declared that the Hetch Hetchy region offered the best source, on account of the purity of the water, the large amount available and the splendid reservoir sites. As the watershed lay within a national reservation, it was necessary to secure from Congress permission to build the required dams.

Among the very first to vision the future needs of San Francisco was the then Mayor, James D. Phelan. He filed for the appropriation of water at Hetch Hetchy and Lake Eleanor in 1901, and donated these valuable appropriations to his native city, San Francisco. Other Hetch Hetchy lands, privately owned, were purchased by the city with money from the first bond issue of $600,000.

It became necessary to secure from the Federal Government permission to build the required dams, secure rights of way and the use of public lands. The so-called Raker Act was introduced in Congress and at once vigorous opposition thereto sprang up by nature lovers, who declared that reservoirs would mar the beauty of the landscape.

A gallant fight to pass the bill was handled by the representatives of San Francisco. James D. Phelan went to Washington as a volunteer, without compensation, and worked strenuously for its passage. Franklin K. Lane, a Californian, then Secretary of the Interior, Congressman William Kent, and City Attorney Percy V. Long rendered valuable assistance.

In the closing hour of the session San Francisco's fight was won and President Woodrow Wilson signed the bill December 13, 1913. Contrary to the prophesies of nature lovers, the lake at Hetch Hetchy has beautified the landscape.

For years the State of California owned and controlled the Yosemite Reservation, but later conveyed jurisdiction thereover to the Federal Government. The Raker Act has merely granted to the City and County of San Francisco necessary rights of way through the public lands of the United States for the purpose of constructing thereon aqueducts, tunnels and conduits for conveying water to San Francisco for beneficial use and for the purpose of constructing and operating power and electric plants, and necessary reservoirs and dams. The land, formerly the Hetch Hetchy Valley, now covered by the waters of the dam, together with all water rights used by the city, were bought and paid for by San Francisco. We own over 2,700 acres in that vicinity and have conveyed to the United States 1,700 acres of land. In addition and in conformity with the terms of the Raker Act, we have spent over $1,500,000 in the construction of roads and trails, and are to pay $30,000 annually to the United States in consideration of the grant of said rights of way.

The work of construction then went forward. We had been granted the use of 459 square miles of rugged, pine-clad mountains as a watershed, a watershed stretching to the high snow-clad peaks and an elevation of nearly 14,000 feet. The O'Shaughnessy Dam, now finished, created a lake 8 miles in length and 1½ miles in width and capable of impounding one hundred and seventeen billion gallons of the purest mountain water, sufficient to meet the requirements of a city of four millions of inhabitants and the domestic and industrial needs of San Francisco for a period of five years without replenishing. The dam is the largest in California, with a total height above bed-rock of 430 feet and a crest length of 900 feet.

In the beginning and through most of the period of construction M. M. O'Shaughnessy was the engineer in charge. Since his death, the work has been carried on under the supervision of Manager of Utilities E. G. Cahill and Chief Engineer L. T. McAfee.

Leaving the Hetch Hetchy Reservoir, 167 miles from San Francisco, the water flows down the Tuolumne River 12 miles, then through a mountain tunnel 14 feet in diameter, cut in solid granite, for 19 miles. It reaches the Moccasin Creek Power Plant and generates power which produces a revenue to San Francisco of $2,000,000 annually. From there the water is conducted for 16 miles through the Foothill Tunnel, leading to a pipeline which crosses the San Joaquin Valley for a distance of 47 miles. Then follows the coast range division of the aqueduct extending 29 miles westerly, with a 25-mile continuous tunnel, the longest ever driven, and with a capacity of 250 million gallons a day. The daily consumption of San Francisco is about 53 million gallons.

The Coast Range tunnel section ends near Irvington, Alameda County, and from that point a pipe line conducts the water 21 miles, crossing San Francisco Bay and ending at Pulgas Tunnel in San Mateo County. The water is taken through this tunnel for 2 miles and gushes forth at Crystal Springs Reservoir.

All pumping has been done away with, and the reservoirs in San Francisco receive Hetch Hetchy water from the Sierra Nevada Mountains by gravity flow alone, with a resulting saving of about $200,000 a year to the city.

Our thanks are due, today, to those executives who visioned the future, to the engineers and workers who planned and built and to the Federal Government which gave us the use of lands in a great national reservation as a watershed. This dam is named for M. M. O'Shaughnessy, a great engineer and builder and city engineer of San Francisco during the period of construction. He died October 12, 1934, a few days before the first delivery of water at San Francisco from the Hetch Hetchy Aqueduct October 28, 1934.

Mrs. Kathleen Coffey, of San Francisco, has sent me the following lines as a tribute to our departed Chief Engineer:

"He left the green Island, he crossed the sea and land,
He took his place with valiant men beside the Western strand;
He guided nature's forces, his genius proved the key,
That sent the mountain waters a-dancing to the sea.

An eager world was waiting to mark the festal day,
That linked the white Sierras with the City of the Bay;
But ere the crystal waters had reached their destined goal,
The Source of Living Waters had called his noble soul."

Water conserves health, life and happiness. It gives beauty to flower and forest and matchless grandeur to the Yosemite Valley. It controls the destructive element of fire when threatening homes and industry.

God has given to California the wondrous beauty of mountain, of lake and falling waters, and the engineering skill of man has brought the waters to city and farm to conserve the needs of mankind. In the future growth and development of this splendid Empire of the West, and in the preservation of the free institutions of America, may California have a great and important part. "Bring us men to match our mountains."

HON. ANGELO J. ROSSI

Mayor of San Francisco

Mr. Chairman, Mr. Godwin, Regional Director Public Works Administration, Admiral Gherardi, Other Distinguished Guests, Ladies and Gentlemen:

The engineering masterpiece which we dedicate today is typical of the development of the West, and of the spirit of our pioneer forebears.

It is the child of San Francisco. San Francisco has fathered it. San Francisco has watched it grow, and today we are gathered to do honor among others to one who dreamed great dreams, and made those dreams come true.

We are standing on this mass of man-made concrete reinforced with steel which gives to the Metropolis of the West a water supply unsurpassed by any in the world, and one which will endure until the eternal snows which feed it are no more.

As we stand here within the shadow of these granite cliffs, we look back into the past and we look forward into the future, looking into the past we see that great citizen of California, that beloved son of San Francisco, who served as its chief executive at the turn of the century, and who was foremost in the van of those who labored that this day might be. It do not have to tell you to whom I refer, for both history and tradition have entwined the name of James D. Phelan, the first charter Mayor of San Francisco, a distinguished Senator of our beloved state, with the project, the fruition of which we are celebrating today.

With a vision beyond the reach of most, the one who afterwards became the distinguished Senator from California, looked far into the future and saw the visions of the world that would be. He saw the need of a great city for a water supply that would endure through the ages, and with that vision guiding him, on July 29, 1901, the then Mayor Phelan filed an appropriation for the waters of the Tuolumne River, which today form the basis of this water supply which is held in check by this structure on which we stand. Other appropriations by those who worked with Senator Phelan rapidly followed. Earlier appropriations were acquired by purchase, until today San Francisco has the right of taking from the melting snows, which each year flow into the Tuolumne River, four hundred and fifty million gallons of water a day.

And so today, as I have said, as we look into the past, and mark the reality of the vision of one who was my predecessor in the distinguished office which I hold, we must pause and give honor to those who have made this day possible. Next may I pay tribute to my immediate predecessor, James Rolph, Jr., who lent his every effort that this great project might come to an early completion. May I also express the deep appreciation of the people of a grateful city to those distinguished engineers whose genius of planning and construction, have contributed to the great achievement we now dedicate, especially to the late Chief Engineer, M. M. O'Shaughnessy, after whom this great structure is named.

So today as we stand in the memory of the past, but looking with hope into the future, we realize that it is the spirit of the pioneers which has made this day possible. It is the spirit which rebuilt a city from its ashes. It is the spirit which has ripened a dream into a reality, and which has given to San Francisco a water supply which will not fail through the ages.

Time does not permit, and if it did, it would be idle for me to dilate upon the

benefits which flow to our beloved city from this great project, suffice to say, that not once did our people fail to respond to the call when aid was needed to bring it to completion. They willingly voted millions for its building, and thanks to their courage, their faith and their foresight, San Francisco possesses a water supply second to none in the world, sufficient for all of its needs through the years to come, and as lasting as the eternal snows which are its source.

And before I close, may I express to the Engineering Department of the State of California my deep appreciation for its cooperation in the construction of this dam. May I offer to you, Mr. Godwin, and to your superior, Secretary Ickes, the gratitude of my people for the financial aid which we have received from the Federal Government, which has made possible the completion of this undertaking. Above all, may I pay my tribute, as well as a full measure of praise, to the unselfish service of all of those who labored on behalf of San Francisco that this great project might be realized.

And now in conclusion—and above all else—I pause in reverence to those workmen who have given their lives on this great project in the service of their fellow men.

I thank you.

KENNETH A. GODWIN

Regional Director, Federal Administration of Public Works

Ladies and Gentlemen:

As I contemplate this impressive example of engineering skill and reflect on how it all came to pass, I cannot resist proclaiming a genuine pride in American genius, both for its constructive ability and its fine unity in cooperative endeavor.

There has been recorded here, in all this symmetric mass of concrete and steel, a thrilling true story of achievement possible only when soundly intelligent forces of the people's government work in harmony.

This enlargement of O'Shaughnessy Dam is the result of the eagerness for public betterment with which your Federal Government and your State Government have worked together.

As one who has participated in a small way in the part of Federal Public Works Administration has played in making a magnificent reality of this dramatic engineering feat, I confess I am, on this day, filled with pride. And, in being so, I am sure I reflect the feeling of my chief, Public Works Administrator Harold L. Ickes.

This is one of those PWA projects which must be given credit for being outstanding. It is a notable monument to the wisdom of using public money for improvements which will aid and promote the public welfare rather than to waste our substance on huge preparations to destroy the well being of others as some nations seem prone to do.

To hundreds of thousands of American citizens dwelling in this region, this newly-completed link in the great Hetch Hetchy enterprise means increasing

life's conveniences by improving a great public utility. In other words, this is a most useful work of, for and by the people.

Impressed indelibly upon my mind is this day as one of noteworthy advancement in the American way of taking long, vital strides forward.

If, on the occasion of these never-to-be-forgotten dedication ceremonies, only one thought could be left permanently upon the public mind, I would humbly choose that it be a thought having to do with gratitude.

Why not yield, without reservation, to a deep, heartfelt appreciation of the evidence here that your present-day America is, more than ever, the land of unlimited opportunity for glorious achievement?

We remain blessed with more freedom to go ahead on our own initiative than any other people on the globe. We continue to advance constructively every day. Neither depression or recession halts us. Our faith in our great, incomparable constitutional institutions survives with augmented vigor. We are not a people to despair. We are still dedicating our hopes and energies to the works of optimism, building for now and the future, for instance.

This enlarged O'Shaughnessy Dam of today is a symbol of all this. And I know it is achievement of the kind which calls for appreciation.

Thank you.

In succeeding sections of this volume will be found detailed reports of the activities and operations of each of the departments and bureaus under the jurisdiction of the Public Utilities Commission.

PULGAS WATER TEMPLE

This classic structure, with reflecting pool, marks San Francisco end of 155-mile Hetch Hetchy aqueduct. Area will be landscaped and opened to public. Inscription: "I Give Water in the Wilderness, and Rivers in the Desert, To Give Drink to My People. Isaiah 43:20."

SAN FRANCISCO WATER DEPARTMENT

N. A. ECKART

General Manager and Chief Engineer

N. A. ECKART
General Manager and Chief Engineer
San Francisco Water Department

Net water sales for the fiscal year amounted to $6,859,793, an increase of $37,734 over the previous year. This increase of 55/100 per cent is less than normal due largely to the reduction in rates made to large consumers who, as a result thereof, enjoyed an apparent saving of $169,213 during the year.

Due to abundant rainfall and prolific yield of the local sources, it was not necessary to draw from Hetch Hetchy for other than the small amount of water necessary to maintain circulation in the aqueduct. All of the local reservoirs were filled to capacity, and for the first time since 1911 water flowed over the Crystal Springs reservoir wasteway; also, for the first time since its completion in 1924 the Calaveras reservoir spilled, the overflow at this dam reached flood proportions and seriously damaged the stilling basin at the lower end of the spillway.

During the year, contracts for the new Crystal Springs pipe line, the University Mound and Sunset reservoirs, and the Sunset discharge pipe were completed, finishing the $12,095,000 Bond Issue program under the Public Works Administration.

During the year, 10.4 miles of new pipe line were laid in the City system and 2,280 new services installed as compared with 2,321 in the previous year.

During the year, with the cooperation of the Director of Public Health, in anticipation of the expected large influx of visitors to the Exposition in 1939, a survey was made of the plumbing fixtures in all of the hotels in San Francisco, for the purpose of eliminating all hazards of possible cross connections between the water supply and plumbing systems. Excellent cooperation was received from the hotel management in abating such hazards as were found.

Walnut sales for the period grossed $23,808.71 as compared with the all-time high figure of $27,385 in the previous year.

Sincere appreciation is expressed for the splendid cooperation of the personnel of the Department in maintaining the efficiency of the Department, improving service and promoting public relations.

WATER PRODUCTION

The draft on water resources to meet consumption requirements for the year 1937-38 averaged 58.3 million gallons daily. This is a decrease of 0.2 million gallons daily from the preceding year.

Delivery of water from Hetch Hetchy averaged 3.2 million gallons per day, bringing the total Hetch Hetchy delivery to 36,743 million gallons since October, 1934. The past year's delivery was practically all made between July and December of 1937 and was all diverted down Alameda Creek and included in water deliveries to the Alameda County Water District, an equal amount of Calaveras water being transported to the Peninsula reservoir in lieu thereof.

Rainfall Catchment and Storage:

Rainfall on the local watersheds was normal for the fourth consecutive year and an abundant run-off harvest was stored in the Calaveras and Peninsula reservoirs. Surface storage in the Department's reservoir reached an all time peak of 60,910 million gallons on March 25, 1938. This quantity was only 2,983 million gallons less than the total maximum capacity obtainable. On June 30, 1938, storage had been reduced to 50,459 million gallons. The minimum storage for the year was 41,522 million gallons on December 9, 1937, which quantity was 3,600 million gallons greater than the previous peak minimum of December, 1936.

In addition to surface storage the underground supply at the Pleasanton well fields was further replenished during the year, to the point where artesian flow was resumed from the wells at the lower end of the valley. This is the first artesian flow from these wells since 1923.

Also, the total advance release to the Alameda County Water District was increased to 14,642 million gallons, all of which is recoverable by the Department should an emergency make such recovery desirable.

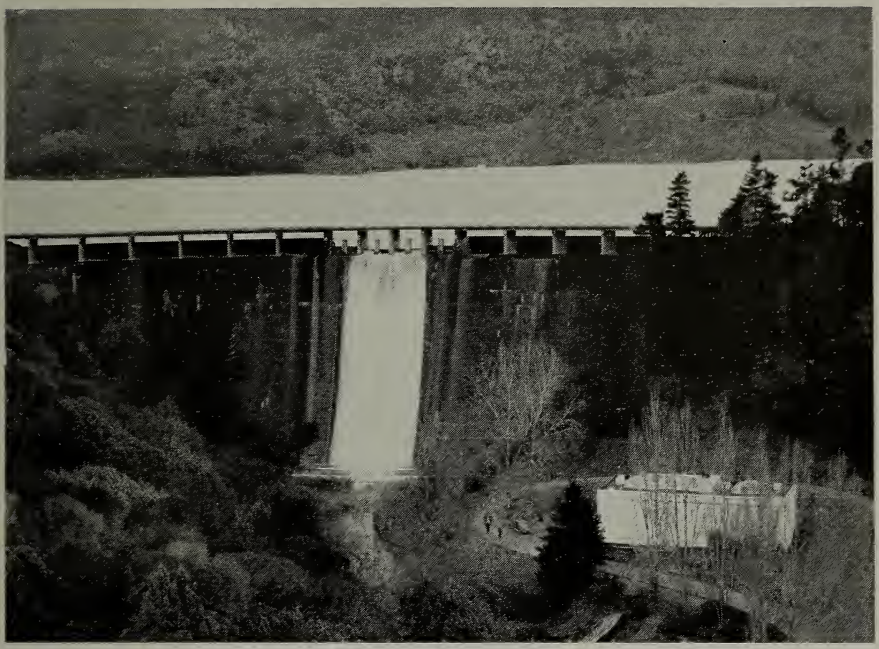
Transmission:

An average of 53.3 million gallons of water per day was brought into the San Francisco Distributing system from the Peninsula reservoirs, and an average of 5.0 million gallons per day was supplied for suburban consumption.

Of the San Francisco consumption, 35.4 million gallons per day were delivered to the College Hill, Lake Honda and Stanford Heights reservoirs through the three transmission mains having their source at San Andres reservoir. The other 17.9 million gallons per day were delivered to the University Mound reservoir through the two transmission mains having their source at Crystal Springs reservoir.

An average of 20.4 million gallons per day was pumped from the Crystal Springs reservoir and transported through the Crystal Springs aqueduct to the San Andres reservoir.

A total of 31.2 million gallons daily was transported across San Francisco Bay through the two Bay Crossing pipe lines to Crystal Springs reservoir. Of this quantity, 30.6 million gallons daily came through the Calaveras pipe line from Calaveras reservoir and 0.6 million gallons daily came through the Sunol aqueduct and the Niles-Irvington pipe line from the Sunol filter beds. No Hetch Hetchy water was brought across the bay.



CRYSTAL SPRINGS RESERVOIR
For the first time since 1911 and the second time since its completion in 1890, the Reservoir filled and overflowed at the spillway.

No water was brought across the bay in the Alameda transmission pipe line during the past year.

General Operation:

The general operating set-up of the Water Production system continued practically unchanged from that reported last year. Delivery from Hetch Hetchy during the year has not been resumed due to the abundance of the local supply and lack of storage space in local reservoirs. Calaveras water is brought by gravity flow to the Crystal Springs reservoir from which point it is either pumped into San Andres reservoir or delivered by gravity to University Mound reservoir in San Francisco. Water from the San Andres is delivered by gravity to Merced Manor reservoir, Lake Honda reservoir, College Hill reservoir and to Central pumps from which station it is boosted to Stanford Heights reservoir. No water was drawn from Lake Merced or the Sunset wells during the year.

Pleasanton Wells supplied local consumption at Pleasanton and Sunol. Water from the natural Sunol filter beds augmented by Calaveras water and a small Hetch Hetchy diversion was released to the Alameda County Water District after caring for the small local consumption between Sunol and Centerville. From December 15, 1937, to June 21, 1938, the consumption on the Bay Crossing pipe line from Ravenswood to Pulgas tunnel was supplied with water drawn from the Sunol filter beds and pumped at Pulgas pumps. During the previous 5½ months these consumers were supplied water by gravity from Calaveras.

NEW CRYSTAL SPRINGS PIPE LINE
Connections between the new 60" Crystal Springs Pipe and existing transmission main at Burlingame. New pipe assures San Francisco adequate supply from Peninsula reservoirs.

All other Peninsula consumption was supplied by the transmission lines carrying water from the Crystal Springs or San Andres reservoirs to San Francisco.

Reservoirs:

The end of the rainy season again found the water levels in Calaveras reservoir and the three Peninsula reservoirs at spillway elevations.

On February 11, 1938, Calaveras reservoir spilled for the first time since the dam was constructed. The spill continued from February 11 to February 23 and again from March 2 to March 29. On February 14, the peak flood flow was reached, the reservoir water surface being 3 feet 9 inches above the lip of the spillway. This large flow caused considerable damage to the stilling pool at the lower end of the spillway channel and necessitated a large amount of temporary emergency work to prevent further damage to the spillway and to adjacent structures. Plans and specifications are at present being prepared for the permanent replacement and enlargement of the stilling pool.

A very close check of seepage and settlement at the Calaveras Dam has been maintained and despite the full storage and heavy rains of last winter these factors were found to be negligible. However, when the reservoir was above 122 feet on the gauge board a certain amount of seepage was found to occur through the hill forming the west abutment of the dam and arrangements are being made to seal this off by grouting operations.

The old guest cottage at Calaveras dam was remodelled and renovated and is now used as living quarters for the ranger and his family. A new garage was built for the reservoir-keeper. The outlet tower and the aerator building were cleaned and painted during the year. A number of the construction camp buildings at the west portal of the Upper Alameda tunnel were demolished and removed.

The Calaveras reservoir was treated once with copper sulphate to retard the growth of algae. A total of 25,000 pounds of copper sulphate was used, this being a dosage of slightly more than one pound per million gallons of water.

The Crystal Springs reservoir was filled to the spillway lip on February 11, 1938. Flashboards were placed in the spillway and an additional 2½ feet of storage was obtained. Some of this additional storage was allowed to spill between floods so as to maintain a degree of control over possible heavy floods later in the rainy season. The amount of spill was regulated so that the flow down the creek did not exceed the maximum flow from natural run-off. This was the first time Crystal Springs spillway overflowed in 27 years, the last previous occurrence having been in 1911.

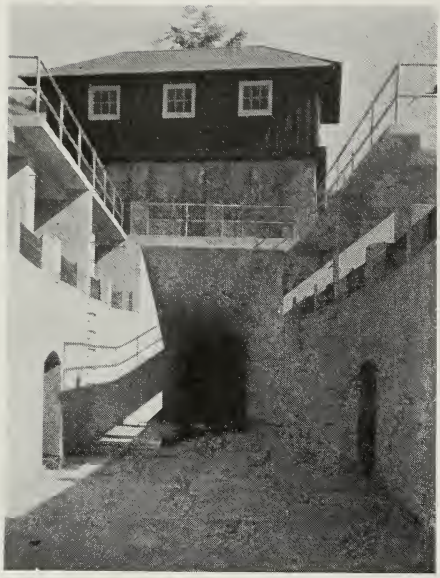
The outlet works for the new Crystal Springs 60" pipe line were put in operation in April, 1938. The old construction camp buildings were demolished and removed from the hillside above the lower dam. Approximately twenty acres of land, known as the James D. Byrnes' property, situated in the heart of the watershed, were purchased by the City and the old buildings torn down and removed, thereby eliminating another potential source of contamination to the water supply.

An ornamental temple of classic design, housing a circular weir, was erected at the outfall of the Pulgas tunnel at Upper Crystal Springs reservoir, marking the western terminal of the Hetch Hetchy aqueduct. Plans contemplate the landscaping and planting of the area immediately surrounding the temple and its approaches, the preliminary grading for which was done during the year.

A number of repairs and alterations were made in the ranger's cottage at Crystal Springs.

The lower lake was given a copper sulphate treatment for algae twice during the year, using one and one-half pounds of copper sulphate per million gallons of water for the first dosage and one pound per million gallons for the second treatment. Snow size bluestone was used instead of the large crystals, and was applied by means of special equipment. Undoubtedly, this form of application was more effective, as the upper lake was dosed in the old way and had to be treated five times during the year, using one and one-half pounds per million gallons on one occasion and one pound per million gallons on four occasions.

San Andres reservoir was maintained at a fairly high level throughout the year, due allowance being made for the winter run-off so that no pumped water would spill back into Crystal Springs reservoir. Rock riprap was placed at the north end of the dam as a protection to the spillway entrance and to the aqueduct discharge structure. The Bald Hill gate tower and the vent shaft were raised five feet in height to give these structures a safer margin of freeboard. Brush was cleared to the high water line of the reservoir. Normal seasonal growths of algae appeared in this lake and it was treated twice with copper sulphate at the rate of one pound per million gallons. The interior of the San Andres watchman's house was remodelled and repairs made to the exterior.



PILARCITOS SPILLWAY
New automatic spillway structure utilizes tunnel and portions of old gate tower.

Pilarcitos reservoir was practically drained in January, at which time the gates were closed and the reservoir allowed to fill. Maximum storage was reached on March 25, 1938, with the water level only four inches below the spillway lip. While the lake was low, repairs were made to the forebay well, and an old wooden slide gate which partially blocked the forebay inlet, was removed. The Pilarcitos spillway was rebuilt with a new overflow type structure replacing the old manually-operated gates. Also, the wooden flume leading from the spillway tunnel to the stilling basin was replaced with a concrete channel.

To prevent seeding of algae in San Andres reservoir through water released from Pilarcitos, it was found necessary to treat this latter reservoir on three occasions with copper sulphate at the rate of one pound per million gallons of water stored.

For the purpose of observing the rate of seepage, observation wells were drilled in the down-stream slope of the embankments of Pilarcitos and San Andres dams. Three wells, ten inches in diameter, and varying from 22 to 82 feet in depth, were sunk in the Pilarcitos dam. Eleven wells, eight and ten inches in diameter, and from 21 to 98 feet deep, were bored in the San Andres dam.

The large volume of water in storage during the past year has again necessitated the use of a large amount of copper sulphate for treatment in retarding algae growths. Also, the high reservoir levels require that larger areas be kept free of weed growths. Maintenance work on roads through the system was more than usual on account of the heavy rains. Considerable fence repair work was done and watershed fire-guards were maintained as usual.

Pump Operation:

The one pump being operated at the Pleasanton wells was shut down on February 27, 1938, when the artesian flow became sufficient to supply the consumption from the Pleasanton pipe line. This artesian flow was sufficient for these requirements until June 28 when it became necessary to resume operation of one pump. With the exception of supplying the small local consumption, these wells have scarcely been pumped since October, 1934, and the water table has been restored to the point where artesian flow was resumed from the wells in the lower end of the valley for the first time in fifteen years. The pumps and motors from most of these wells have been removed and disposed of. At present there are four wells equipped for economical operation under the existing high water table conditions.

The small pump boosting water for the Sunol supply operated without incident during the year.

Electric power connections were maintained on only one of the Pulgas pumps. This pump was operated from December 15, 1937, to June 21, 1938, pumping only enough water to supply consumers between Ravenswood and the Pulgas tunnel.

Belmont pumps were not operated, having been permanently shut down in June, 1936. Changes were made on the State highway through the Belmont lot, the width of the right of way being increased to one hundred feet. Property on the west side was exchanged in lieu of a strip on the east side. A new metal fence was built along both sides of the highway and the hedges replanted.

Millbrae pumps have not operated for several years and probably will never operate again.

The Crystal Springs-San Andres pumps were in normal operation throughout the year except during flood periods when the Crystal Springs aqueduct was used to capacity in transporting flood waters to San Andres reservoir. Approximately 30 per cent less pumping was required to maintain the level of San Andres reservoir than was required during the preceding year. Water works appurtenances connected with the number two Crystal Springs pipe line necessitated some change in the landscaping at the Crystal Springs pump station, and considerable work had to be done to provide proper drainage. A rock retaining wall connected to the concrete structure at the northwest corner of the building was built to prevent the road above from sliding out, and to give a greater yard area for storage of supplies.

Owing to the higher level maintained in the reservoir during the past year, it was not necessary to operate the Crystal Springs booster pump which is used to increase the quantity of water transported through the Crystal Springs pipe line to the University Mound reservoir. The new 60-inch line now in service has sufficient capacity so that in all probability these pumps will not be needed for some years to come. Before this new line was completed, at certain periods when the old 44-inch line would not deliver sufficient quantity by gravity flow, the deficiency was made up by by-passing water from the San Andres reservoir through a cross connection at Millbrae.

Pipe Lines:

As usual, all water brought through the transmission pipe lines was treated with either chlorine alone or with both chlorine and ammonia. All water brought through the Calaveras pipe line was aerated.

Electrolysis surveys were made on the Corral Hollow pipe line and on the Bay Crossing pipe lines. Electrolysis continues to be an annoying problem in various sections of the Water Production system.

The largest job of pipe maintenance during the year was the painting of the Bay Crossing pipe lines and the bridge. Part of this work was done in the fall of 1937 before the rains, and the balance is now being completed. The asphalt pipe dip on the 76-inch line on the bay bridge is badly checked in certain areas, and plans are being made to remove the coating from the affected area and apply a cold paint.

Approximately, 250 feet of the 30-inch San Andres pipe was relocated so as to be clear of an addition to the Holy Cross Mausoleum. One large blow-out oc-

PILARCITOS SPILLWAY
New spillway entrance structure, safeguarding Pilarcitos Dam by automatic release.
Old spillway used manually operated gates.

curred in the line at the Reichardt Duck Ranch at Baden. The section of line was drained and a patch about ten inches square was welded over the hole. This pipe is 67 years old.

The number of leaks on the San Andres 54-inch line caused by electrolysis were considerably reduced, only seven having occurred during the year and these in nearly every case were caused by the wooden plugs in old leaks coming loose.

No trouble occurred on the Merced Branch of the San Andres line, but it has been put to very little use, only an average of one-half million gallons per day passing through it.

The old 44-inch Crystal Springs pipe line continues in use as far as Millbrae. It is not in use from Millbrae to Sierra Point on account of the dangerous condition at the Sierra Point suspension bridge across the active Sierra Point slide. Plans are being made to relocate the pipe line here which should be carried out at an early date. From Brisbane to the City the old pipe is utilized to deliver water to several consumers connected to it. At another location during the heavy rains a slide forced the pipe out of line causing it to crack around a seam, necessitating a shut-down of the line until repairs could be made.

The Crystal Springs to Burlingame section of the new 60-inch Crystal Springs-University Mound pipe line was put into service on April 13, 1938. The Millbrae to University Mound section of this line has been in service since April, 1937. With a number of cross connections having been provided for transferring water,

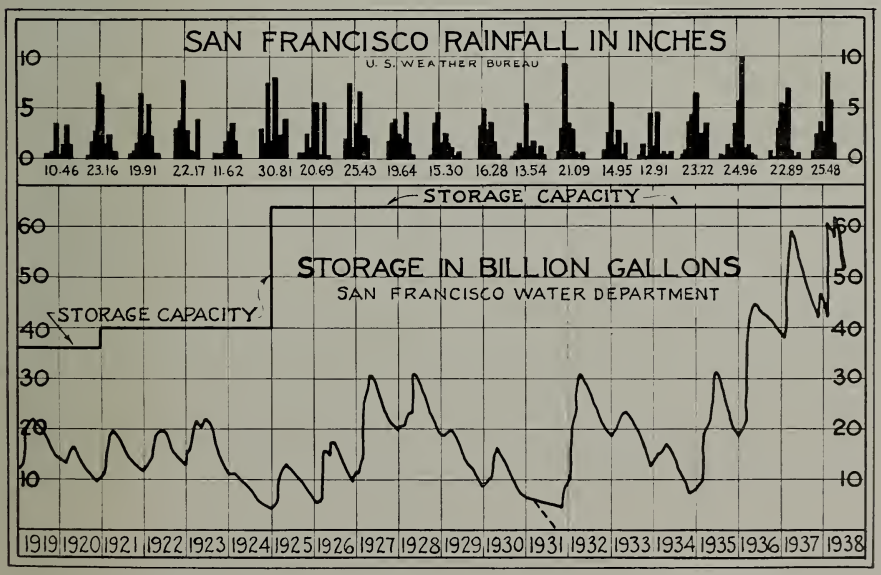
a large number of gate valves are in use, so all of them have been numbered for operating purposes.

The Alameda transmission pipe line on the east side of the bay was used during a portion of the year to deliver water to the Alameda County Water District absorption area near Centerville and to serve consumers between Niles and Centerville. On the west side of the bay it was used to serve Crystal Springs water to a few consumers between Burlingame and Belmont. Testing was continued in the section of line south of Broadway, Redwood City and north of Five Points, this being the only section that has not been repaired or abandoned after testing up to seventy pounds pressure or more. The section of 54-inch pipe between Burlingame and Millbrae was incorporated into the new Crystal Springs-University Mound pipe line.

Aqueducts:

Approximately, 2,900 feet of wooden flume on the Stone Dam Aqueduct were removed and replaced with 48-inch diameter reinforced concrete pipe. This was done as part of a program designed to replace all wooden flume sections of this aqueduct with permanent structures of a type less costly to maintain. About 400 feet of the flume on Stone Dam Aqueduct Section 2 washed out in February. Repair of this section has not been made. Since the above date all flood water from the Stone Dam has wasted down Pilarcitos creek and into the ocean at Half Moon Bay. At present, the summer flow is being diverted to Crystal Springs reservoir instead of San Andres.

The Crystal Springs Pump Aqueduct continued to require repairs to the concrete lining, and bulkheads were built on the low side to retain fill along the canal. A section of 24-inch cast iron pipe blew out near the Crystal Springs pumping station and had to be replaced.



Meter Services:

The number of consumers' meters installed in the suburban districts was increased by 20 to a total of 752 meters. Of this total, 686 were in service and 66 were shut off on June 30, 1938. Redwood City, using an average of one million gallons per day, began to take all of its water supply from this Department on May 1, 1938. During the previous 16 months they had been taking only a little over one-half of their total supply.

Alameda County Water District:

Under the agreement of September 24, 1936, the Department, in exchange for certain benefits, contracted to release 15 billion gallons of water to the District as an advance against regular annual releases which the Department is required to make under an earlier settlement.

During the past year, 2,989 million gallons were released to the District, bringing the total advance at June 30, 1938, to 14,642 million gallons. Of the past year's release, 1,660 million gallons were delivered through the Alameda pipe line to the District's absorption area near Centerville and 1,329 million gallons were released over the United States Geological Survey Gauging Station on Alameda Creek near Niles.

From February to June, 1938, no water was released to the Alameda County Water District's absorption area as the District failed to maintain facilities so such release could be made.

No release was due the District on account of this year's storage. During the past rainy season, Calaveras reservoir functioned in such a manner as to retard the peak flood flows and allowed this water to flow down the creek over a longer period, causing more percolation than if the floods had not been interrupted by Calaveras reservoir.

Very gratifying results have been realized from the advance releases which, together with the abundant natural run-off the past three years, have restored the underground water table of the Niles Cone area to the point where wells in the lower end are flowing artesian, checking salt water intrusion from the bay and thus saving this rich agricultural area from threatened extensive damage.

Pleasanton Township County Water District:

Under various agreements dating from 1918, the Department is obliged under certain water table conditions, to either pay power bills for pumping or furnish water to certain land-owners in the vicinity of Pleasanton and to the Town of Pleasanton.

During the entire year the Department continued to be liable for the cost of pumping the wells designated as the "Community Wells" and for the wells known as the "Landowners' Wells."

The water table was at sufficient elevation to eliminate the obligation of furnishing water to the Town of Pleasanton and to the Castlewood Country Club for periods of six months and four months, respectively, during the past year.

This is the first time in more than 20 years that there has been relief from the Castlewood obligation and the second time in 9 years from the Town of Pleasanton obligation.

Retirement:

The close of the fiscal year marked the retirement of Mr. A. W. Ebright, Superintendent of the Alameda Division. Mr. Ebright had served nearly 51 years in the Water Production division of San Francisco's water supply. He was admired and respected by all who knew him and his retirement is here noted as a loss to the Water Department and to those associated with him in his work.

CITY DISTRIBUTION DIVISION

Water Consumption:

The average daily consumption during the year was 58,276,121 gallons. This amount was 210,460 gallons, 0.4 per cent, less than the previous year. Within the City boundaries the consumption dropped to an average of 53,286,886 gallons which was 3.2 per cent less than last year's consumption. The increase in suburban use brought the daily average almost up to last year.

All districts lost in consumption according to the records except the newly formed Merced Manor district. This district split off from the Lake Honda district the previous year, so that the comparative consumption for the past two

SUNSET PIPE LINE
This 60" main is outlet for Sunset Reservoir, serving 40% of San Francisco, including residential areas in Richmond and Sunset districts.

years is not a fair one for either district. If consumption in the Merced Manor district is added to the Lake Honda consumption as it was previously, the Lake Honda consumption would have increased 1.3 per cent.

The loss in consumption in the other districts was as follows:

Forest Hill, 0.6 per cent; Stanford Heights, 6.1 per cent; College Hill, 10.3 per cent, and University Mound, 4.7 per cent.

Operating Expenses:

Detailed costs of operating the Distribution Division are set forth elsewhere in this report. A general description of the work done in the Division and the condition of the properties are given in the following paragraphs:

Transmission Mains:

The new Crosstown Pipe Line was put into service on October 1, 1937, as an auxiliary supply to College Hill. The new connection between the San Andres 54-inch Transmission Main and the Lake Honda Transmission Main was completed on July 30, 1937.

No other work was done on the transmission lines within the City. All are in good condition except that portion of the old San Andres pipe line between San Jose Avenue and Ottawa Street.

City Reservoirs:

The new basin of the University Mound reservoir was accepted on December 31, 1937, and dedicated on January 13, 1938.

The new Sunset reservoir was accepted on June 26, 1938.

The Works Progress Administration forces have completed the planting around Merced Manor reservoir, and have made a very pretty little park of the property around the pumping station and reservoir.

All of the reservoirs and tanks are in good condition.

Lake Honda Screen House:

This plant has been in service all of the year and it is in good condition. It will go out of service automatically when the Sunset reservoir is put into use as the principal storage in the Lake Honda district.

Lake Merced:

No water was taken from Lake Merced during the year. The storage increased from 1,850,615,000 to 2,212,439,000 gallons, an increase of 361,824,000 gallons. During the year it was decided to establish the elevation of the spillway for the lake at 28 feet, 4½ inches, on the gauge at which level the lake will contain 2,432,396,000 gallons.

The forces of the Works Progress Administration are now paving the boulevard around the lake.

Pumping Stations:

Central Pumps have operated during the entire year and have pumped 2,489,-930,000 gallons into the Stanford Heights district. This is an average of 6,821,726 gallons per day. The maximum day, June 14, the consumption was 8,842,000 gallons, more than the 8½ million gallons a day capacity of the pumps. The average daily use during June was 7,921,633 gallons. It will soon be necessary to install an additional unit in the station.

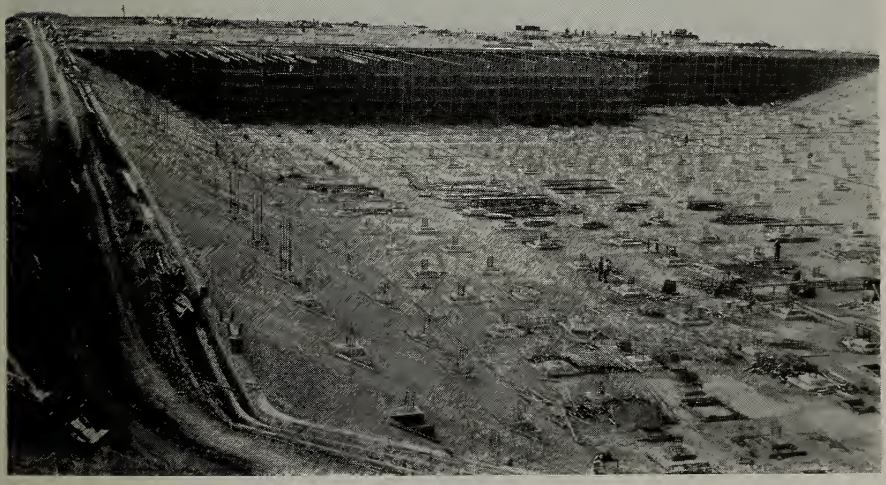
During the year the tubes in both condensers started to leak, due to corrosion. The leakage increased to such an extent that it was necessary to remove the old tubes which were replaced with arsenical copper tubes. This work was done under contract by the California Steel Products Company at a cost of $4,210.

It was necessary to run Precita Valley pump for a few days in June as the consumption exceeded the capacity of the San Andres supply to Lake Honda due to the fact that Central Pumps were also taking water from the 54-inch line.

The small electric pumps ran throughout the year. No water was taken from Sunset Wells.

Meter Expense:

The routine maintenance of meters was carried on throughout the year. There were 4,420 meters changed and 1,707 brought home.



SUNSET RESERVOIR
Located between 24th, 28th Avenues, Ortega and Pacheco Streets. Capacity 93 million gallons. Covered with a reinforced concrete roof 13 acres in area, it is one of the largest covered reservoirs in the world.

City Pipe System:

Just before the close of the year the 60-inch discharge line from Sunset reservoir was finished which completed the Public Works Administration program under the 1933 Bond Issue.

Street Department Expense:

The necessary work of blowing off dirty water and of answering miscellaneous complaints which is charged to this item was carried on as usual during the year. The work was routine.

Service Connections:

During the year, 1,917 services were installed. This is slightly less than the 2,082 of the previous year but more than the 1,548 installed during 1935-1936.

Machine Shop:

The machine shop has been very active during the year. In addition to the usual maintenance work the shop has been low bidder on most of the public contracts for furnishing articles that they are equipped to make. These include gate valves up to 16-inch, detector checks, lead connections, plain and bell bands, nipples and gate valve parts. This material has been manufactured, including purchase of all material, and full shop overhead, at a cost of $14,300.53. As the total of the next lowest bids for the work amounted to $20,067.66, the work has been done by the machine shop at a saving to the City of $5,767.13. Particular credit for these low manufacturing costs is given to Mr. Roy Tullis, who is in charge of the shop.

Main Extension Contracts by the Department:

Under the provisions of the charter, any extension of the system costing in excess of $1,000 must be constructed by public contract. The Department, however, is permitted to enter a bid on such work in competition with the general contractors.

During the year the Department was awarded three such contracts on which it was the low bidder. These have been completed within the bid price and with a material saving to the City.

The first of the three was Contract No. 137 for the County Line connection. The value of the work performed, on the basis of the bid prices, was $2,416.35 and the actual cost of the work was $2,157.41. The amount that would have been paid to the next lowest bidder on the basis of the actual work done and his unit prices is $3,226.20, a net saving on the actual cost of the work was $1,125.19. In addition to this, the Department saved the cost of inspection which was an indirect saving of $743.90, making a total gain to the City of $1,869.09 on this contract.

The two other contracts were Nos. 147 and 151, both for cast iron mains in the city streets. For Contract No. 147 the value of the work performed on our bid price was $1,004.22, the actual cost $899.72; the next lowest cost would have been $1,015.83, making a direct saving of $116.11 with an indirect saving of inspection in the sum of $164.35, a total for the job of $280.46.

On Contract No. 151, value of work on our bid price was $1,518.81, the actual cost $1,197.87, and on the basis of the next lowest bid $1,790.73 which gave a direct saving of $592.86 and a saving in inspection of $259.50, a total of $852.36. On these three jobs the City made a total saving of $3,001.91.

WATER PURIFICATION DIVISION

The activities of the Water Purification Division have continued to increase and this, with a somewhat greater volume of work to be handled, accounted for an increase of two men on the staff. One of these men has been detailed to supervise the operation and maintenance of the chlorinating equipment and this has resulted in improved control of chlorination and better maintenance. Studies of various problems of special interest to the Department have been continued, with particular reference to corrosion, algae and weed control. Experimental work has been conducted with reference to coagulation of Calaveras water; additional biological studies of the several storage reservoirs have been carried on and the program for eliminating cross connections with the water supply has been extended.

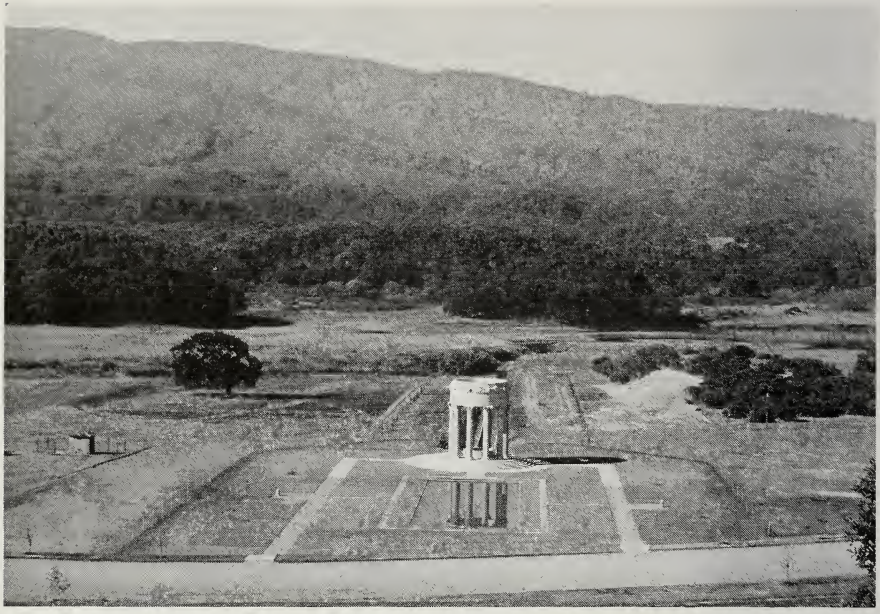
Laboratory:

The laboratory and Purification Division office continue to be housed in the old pump building at Millbrae. Some new equipment has been purchased and some built-in features were added to the laboratory during the year. The increased volume of work has resulted in a serious congestion of the laboratory quarters which seriously handicaps the activities of the division. Consideration should be given to providing adequate laboratory space and facilities for these important activities. The following is a tabulation of the samples examined in the laboratory during the past year:

Bacteriological Examinations	4,634
Partial Chemical Analyses	1,171
Complete Mineral Analyses	27
Microscopical Examinations	468
Dissolved Oxygen Tests	576
Crenothrix Inoculations and Analyses	247
Examination of Wells and Other Sources	192
Corrosion Tests	1,287
Electrical Conductivity Tests	2,995
Soil Tests	518
Miscellaneous Field Chemical Tests	2,005
Nitrogen Cycle Determinations	31
Gas Analyses	12
Iodine Determinations	8

Chlorination:

Chlorination of the water supply has been continuous at all of the regular chlorinating stations throughout the year. The new station at Tesla Portal, the east end of the Coast Range Tunnels, on the Hetch Hetchy Aqueduct, was completed and placed in operation during the year. The station has operated but a few months during the year, due to the fact that water from Hetch Hetchy was not being brought through the Aqueduct, except during these few months, on account of the adequacy of the local sources and the conditions of the Raker Act. The operation of the equipment in the station during its period of use was entirely satisfactory.

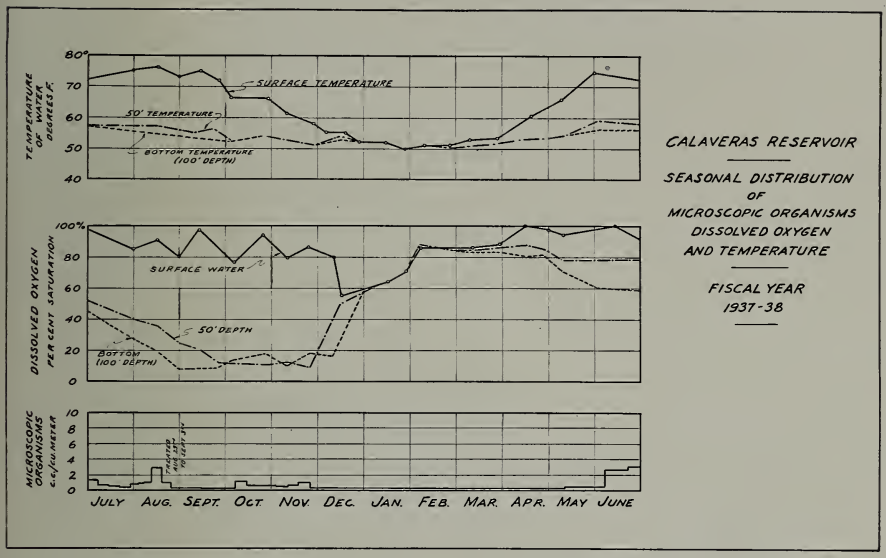


PULGAS TEMPLE
General view looking toward Crystal Springs Lake where Hetch Hetchy aqueduct mingles water from the Sierra Nevada Mountains with the local supply. Landscaping now in progress.

Two 100-pound capacity, solution-feed, ammonia machines were purchased for installation at the two San Andres outlets but the installation was not made during the fiscal year as the machines were not delivered until after July 1, 1938.

The portable chlorinating unit which is ordinarily maintained at Millbrae for emergency use has been put to service a number of times during the year for sterilization of new mains and pipe lines, and was utilized at the new University Mound reservoir for some time, sterilizing the reservoir before it was placed in service. The equipment has all been maintained in first-class order and much of it has been overhauled during the year, replacing worn or defective parts. A total of twenty-five chlorinating machines, with a combined capacity of 5,800 pounds of chlorine per 24 hours, and a total of six ammonia machines with a combined capacity of 755 pounds per 24 hours, are in operation or reserve at twelve different stations located throughout the system.

The effectiveness of the chlorination of the water supply is evidenced by the fact that while bacteriological contamination of all sources and open reservoirs has been found to be above the percentage normally allowed for a public water supply, in no case have the treated waters entering the Distribution System even approached the upper allowable limit. The results of this work are clearly shown in the accompanying tabulation of bacteriological analyses of the sources and treated waters. It should be pointed out that although the sources of supply may show evidence of contamination this evidence is merely presumptive and is not considered dangerous, as the watersheds of this system are practically free of human habitation, and such contamination as is indicated is in all probability entirely due to wild life.



A study was made of minimum chlorine dosages at the three Peninsula stations. For a period of six weeks in the Spring of 1938, chlorine dosages at these stations were cut to an absolute minimum and daily checks were made of all raw and treated waters to determine the effectiveness of the treatment. These tests showed that chlorination could be maintained at a minimum with safety under the conditions present in the water at that time. A repetition of this test will be made at other times during the year and it is felt that a saving in the cost of chlorination will result.

Algae and Weed Control:

All of the storage reservoirs have been maintained at fairly high levels throughout the year and the quality of water withdrawn has been satisfactory. Copper sulphate treatments have been made as required, averaging two treatments per reservoir for the year. Microscopical examinations of the samples from the reservoirs have been made twice each week in the laboratory and the samples concentrated in centrifuge tubes to note the total Plankton catch. These catches are recorded on the basis of cubic centimeters per cubic meter of water strained through the Plankton net. The presence of these organisms is shown graphically on the sketches for Lower Crystal Springs and Calaveras reservoirs.

The new machine developed by this Department for applying copper sulphate to the reservoirs has been used throughout the year on Lower Crystal Springs and its operation has been very satisfactory. With this new device, it is possible to treat the reservoirs much more quickly and the treatment is more effective than with the old method which had been used prior to last year. Similar machines are now under construction for use on the other reservoirs in the system. The machine was briefly described in last year's report.

BACTERIOLOGICAL ANALYSES
SOURCES OF SUPPLY AND TREATED WATERS

Location Sources and Reservoirs	Total Samples	3 or More Tubes Positive		Total No. of Portions	Portions Positive	
		No. of Samples	Per Cent of Samples (5% all'd)		No. of Portions	Per Cent of Portions (10% all'd)
Early Intake	41	18	44.0	205	93	45.3
Priest Reservoir	51	27	53.0	255	131	50.1
Moccasin Reservoir	59	35	59.4	295	178	60.3
Crystal Springs Lake	108	13	12.0	540	73	13.5
San Andres Lake	108	12	11.1	540	81	15.0
University Mound Reservoir	104	0	0	520	33	6.3
College Hill Reservoir	104	68	65.4	520	343	66.0
Lake Honda Reservoir	104	30	28.8	520	172	33.1
*Central Reservoir	104	1	1.0	520	12	2.3
*Stanford Heights Reservoir	104	0	0	520	8	1.5
Calaveras Reservoir	41	14	34.1	205	70	34.1
Pleasanton Wells	57	18	31.6	285	104	36.5
Treated Water for Distribution						
Hetch Hetchy Aq. Bay Crossing	60	3	5.0	300	16	5.3
Crystal Springs Line	333	1	0.3	1,665	27	1.6
Alameda Line, Belmont	54	0	0	270	3	1.1
San Andres Line	308	2	0.6	1,540	51	3.3
North San Andres Line	194	2	1.0	970	19	2.0
University Mound Inlet	104	0	0	520	9	1.7
University Mound Outlet	107	4	3.7	535	23	4.3
University Mound System	104	1	1.0	520	7	1.3
College Hill Inlet	104	4	3.8	520	23	4.4
College Hill Outlet	110	1	0.9	550	13	2.4
College Hill System	104	1	1.0	520	24	4.5
Lake Honda Inlet	104	1	1.0	520	12	2.3
Lake Honda System	104	0	0	520	3	0.6
Lake Honda Outlet	107	2	1.9	535	16	3.0
Stanford Heights System	104	0	0	520	7	1.3
San Francisco Airport	104	0	0	520	2	0.4

*Covered Reservoirs.

Weed growths have not been a particular factor in operating difficulties during the past year. Since 1934 no trouble has been experienced with the weed growth which produced a taste in the San Andres water, in that year. The growth of weeds in College Hill and Lombard reservoirs in the City continues but has given only occasional trouble, other than an unsightly appearance. Weed growths will continue in these reservoirs until such time as the reservoirs are covered.

In addition to the regular testing of the water in storage reservoirs as has been done heretofore, a series of temperature and dissolved oxygen studies were conducted in Lower Crystal Springs and Calaveras; results of these studies are shown on the following charts. These tests of temperature and dissolved oxygen are made at two-week intervals throughout the year and by means of this information it is possible to utilize the outlet gates which at a given time will supply the most satisfactory quality of water. It will be noted that in the winter time condition of the water in the reservoir is practically the same from top to bottom but that in the summer and fall water at the lower levels becomes more or less devoid of dissolved oxygen. This is a natural biological phenomenon which occurs in practically all open reservoirs. Its only effect on the quality of the water is that, occasionally, tastes and odors are developed in waters which are devoid of

oxygen. At these times, it is possible to obtain satisfactory water by use of outlet gates in the upper levels of the reservoirs.

Crenothrix:

The chlorinating and ammoniating plant at Tesla Portal was completed and tests indicated satisfactory results were to be expected in the treatment of the flow through the long Coast Range tunnel.

Chloramine treatment below Calaveras Dam and at Irvington Portal has eliminated trouble from the crenothrix organism in the Alameda Irvington section of the Coast Range tunnel and the Bay Crossing pipe line.

Training School:

The training school for department employees whose duties are related to water treatment was not conducted this past year but individual instructions were given to numbers of employees at various times. As new equipment was installed at the various treatment plants, the operators were instructed as to its operation and maintenance, and methods of testing the effectiveness of the treatment were explained.

From time to time, different employees whose work is related to water treatment have been brought into the laboratory and given detailed instruction in methods of operating their equipment and making simple tests. The new operator for the station at Tesla Portal spent several days in the laboratory learning to make a number of tests which it was desired to have made each day at the Tesla station. A new report form for the chlorinating stations was developed and is now in regular use. The talks on water troubles and treatment, which were given in the City office building during the preceding year were continued during the past year.

SAN FRANCISCO WATER DEPARTMENT
TYPICAL MINERAL ANALYSES OF WATER FROM THE SEVERAL SOURCES

(Results Expressed in Parts per Million Except pH)

Source	Crystal Springs Line	San Andres Line	Calaveras Line	Hetch Hetchy Aq. at Irvington
Turbidity	1	3	15	1
Color	15	25	35	7
pH	7.5	7.7	7.7	6.7
Total Solids	130	120	120	36
Loss on Ignition	64	56	50	12
Fixed Solids	66	64	70	24
Silica and Insolubles	4.4	6.4	12.5	3.8
Sodium (by diff.)	8.1	8.7	2.3	8.1
Calcium	20.2	16.5	19.1	4.0
Magnesium	9.3	8.2	6.8	1.2
Iron	0.02	0.06	0.18	0.18
Aluminum	0.37	0.57	0.66	0.19
Manganese	0.01	0.01	0.01	0
Bicarbonate	95	77	79	22
Carbonate	0	0	0	0
Sulphate	14.3	11.3	12.6	8.6
Chloride	11	16	5	4
Total Hardness as $CaCO_3$	91	79	80	16
Alkalinity as $CaCO_3$	78	63	65	16

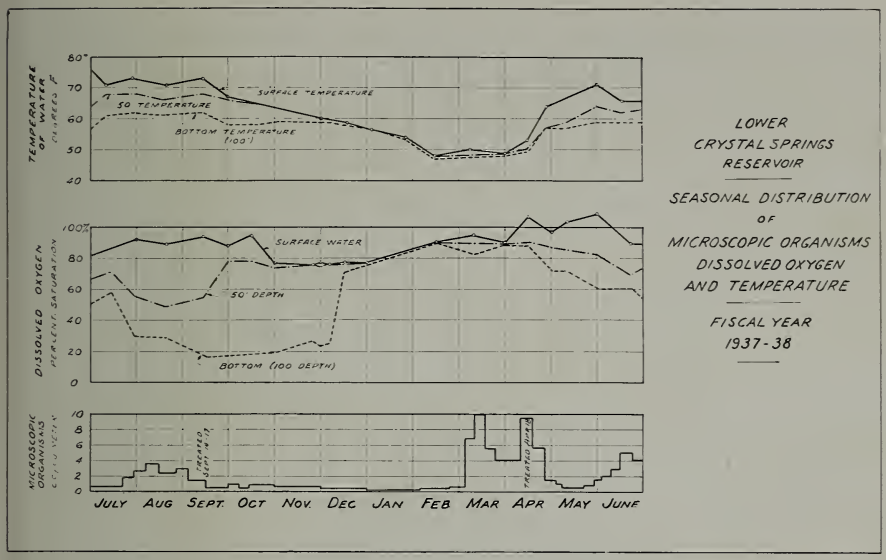
REPORT OF LABORATORY EXAMINATIONS
Week Ending June 25, 1938

Sources and Reservoirs	Max. Agar Count 37° C	Coliform Group 10cc. Por. No. Ex'd.	No. Pos.	% Pos. Year	Chemicals p.p.m. Alk.	Cl.	Hard	pH	Turbidity	Date Sample Pos.
Early Intake	16	5	1	45.3	8	1	10	7.0	1	6–22
Priest Reservoir	4,000	5	1	50.2	8	1	10	6.9	1	6–21
Moccasin Reservoir	300	5	4	61.7	10	1	12	7.0	1	6–23
Crystal Springs Lake	6	10	0	14.4	85	16	91	7.5	1	
San Andres Lake	10	10	1	15.0	73	13	81	7.5	1	6–24
University Mound Res.	100	10	0	6.5	85	14	92	7.5	1	
College Hill Reservoir	320	10	7	64.8	76	15	85	7.6	1	{6–20}4 {6–23}3
Lake Honda Reservoir	190	10	0	32.3	73	15	86	7.7	2	
Treated Waters										
Niles Reservoir	6	5	0	0	166	20	200	7.7	1	
Hetch Hetchy Aq. Bay X	34	5	0	5.4	168	20	200	7.9	6	
Palo Alto Pipe Line	Line not in service as of June 25, 1938									
Crystal Springs Line	8	30	0	1.6	84	16	92	7.5	1	
Alameda Line, Belmont	3	5	0	1.1	74	16	83	7.5	1	
San Andres Line	9	30	1	3.3	74	13	80	7.5	1	6–24
North San Andres Line	9	30	0	2.4	72	16	85	7.7	1	
University Mound Inlet	10	10	0	1.7	84	14	93	7.5	1	
University Mound Outlet	9	10	0	4.3	83	14	94	7.6	1	
University Mound System	360	10	0	1.3	83	14	93	7.5	1	
College Hill Inlet	40	10	0	4.4	75	15	86	7.7	1	
College Hill Outlet	4	10	0	2.2	74	16	86	7.7	1	
College Hill System	400	10	0	4.4	75	16	86	7.7	5	
Lake Honda Inlet	6	10	0	2.3	72	15	86	7.7	1	
Lake Honda Outlet	5	10	0	3.0	72	14	86	7.7	1	
Lake Honda System	8	10	0	0.6	72	15	87	7.7	2	
Central Reservoir	7,200	10	0	2.3	72	15	81	7.6	1	
Stanford Heights Res.	6	10	0	1.3	72	15	80	7.7	1	
Stanford Heights System.	8	10	0	1.3	73	16	83	7.7	1	
Lombard System	9	5	0	3.3	72	15	87	7.7	2	
San Francisco Airport	4	10	0	0.4	84	16	92	7.5	1	

Remarks: All water supplied to consumers conforms to standards.

Coagulation Studies:

During March 1938, an experimental study was made to determine the feasibility of clarifying Calaveras water during periods of turbidity by the introduction of an alum coagulant into the Hetch Hetchy Aqueduct at Irvington Portal. A temporary plant was set up in the chlorinating building feeding an alum solution into one of the chlorine hose lines which carried the solution into the main aqueduct where it mixed with a small flow of Calaveras water and some tunnel drainage forming a floc which settled in the pipe. Varying flow rates and dosages were tried over a period of four weeks after which the line was flushed with a high flow for one day to remove the floc from the line. Prior to this, a small experimental plant was set up in the laboratory at Millbrae to determine what velocities would be necessary to settle floc in a pipe line and later what higher velocities would be necessary to remove the floc from the line; with this data, the larger experiment was conducted at Irvington. It was found that with a raw water having a turbidity of 30 to 45 ppm., an alum dose of from 1½ to 2 grains per gallon would effectively coagulate the suspended matter and that the floc would settle within 10,000 feet in the Hetch Hetchy pipe line, leaving a resultant turbidity of one part per million or less. Subsequently, flows of 20 to 30 million

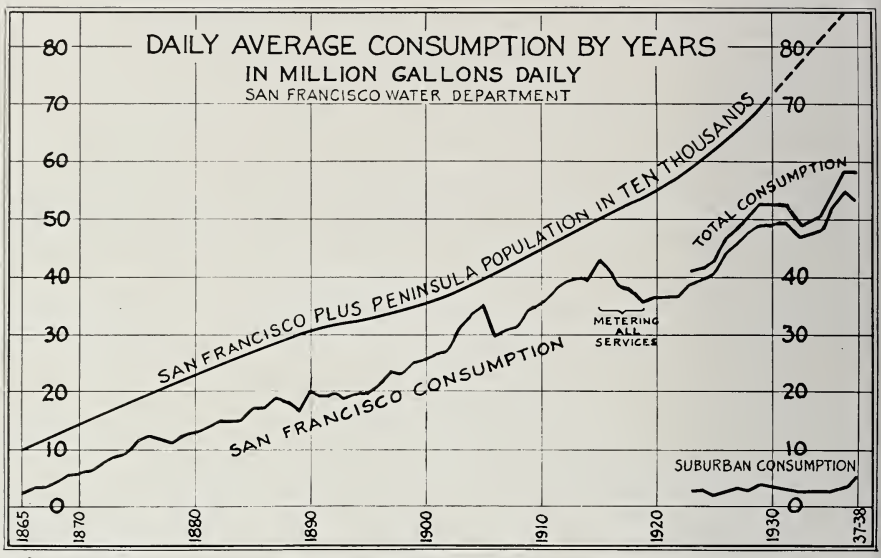


gallons daily were run through the pipe to flush the line and it was found that the floc was effectively removed. All of the coagulated material moved out at once with this large flow. An analysis of the cost of operating such a plant indicates that satisfactory clarification of Calaveras water under extreme conditions of turbidity could be accomplished at a cost of less than $3.00 per million gallons. The experimental work produced such satisfactory results that it is probable that this plan of operation will be adopted as a regular treatment at such times of the year as Calaveras water is too turbid to be served to consumers directly. This plan of operation would eliminate the necessity of passing water through the Sunol filter beds, involving the operation of the Pulgas pump station, for delivery to consumers along the Bay Crossing pipe line.

In addition to this experimental work, numerous tests of the coagulation of Peninsula waters was carried on in the laboratory on a small scale to determine what type of coagulant is best suited to these waters, what dosages are required, and what the mixing and sedimentation time should be. These studies are preliminary to the studies which must be conducted prior to the design of filtration plants for this system.

Cross Connections:

The protection of the San Francisco water supply against possible contamination through cross connections with other sources of water supply and other potential hazards has been continued during the year. A number of new well supplies were located and connections severed or protected by approved check valves. The list of check valve installations now active in the system totals one hundred and eighty-one. These are tested for leakage regularly at six-month intervals. At the time of the hotel strike the Purification Division was called on to test the water in all hotels on strike. Samples were obtained each day from a total of 18 hotels and examined in the laboratory. In a few cases, evidence of



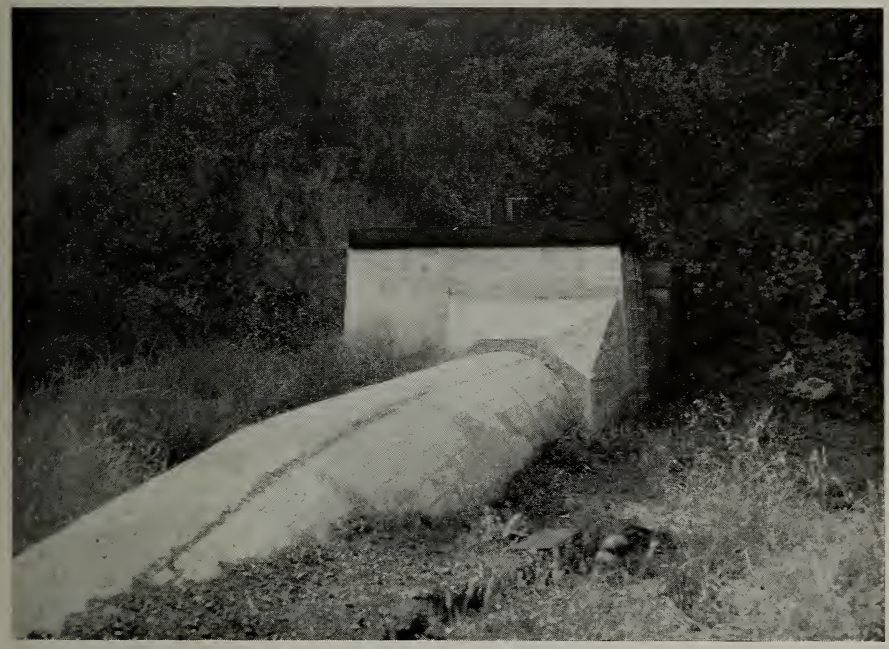
minor contamination within the hotel was detected. Realizing that San Francisco would entertain many visitors at the time of the 1939 Fair, it was decided to make a thorough plumbing inspection of all the hotels in the City to eliminate hazards from cross connections in plumbing systems. The Director of Public Health cooperated in this inspection by furnishing and providing the services of a plumbing inspector and the necessary authority to abate the hazards found. One inspector from the Purification Division and one from the Plumbing Division of the Health Department covered the City thoroughly, block by block, examining the plumbing and fixtures in each hotel. Six hundred and fifty-one hotels were examined of which 82, or 12.6 per cent, maintained one or more plumbing hazards which could effect contamination of the water supply within the building. Excellent cooperation was received from the hotel managers in abating the hazards found in the survey.

Complaints:

The number of bad water complaints received from consumers this year showed a further decrease over previous years. Five hundred and ninety-one complaints were received during the year. Of these, only 62 complaints of taste or odor were received and approximately 35 complaints of other causes except dirty water. The remaining 494 complaints were of dirty or discolored water. Causes of dirty water are usually attributed to repair work being done on pipe lines in the neighborhood or to fires or other unusual conditions which create excessive velocities in the street mains.

Gas Analyses:

In June 1938, an explosion and fire occurred in one of the Bay Crossing pipe lines in Redwood City in connection with a construction contract. A number of



STONE DAM AQUEDUCT
Inlet structure at east portal. Stone Dam Tunnel No. 2 and 48" concrete pipe which replaces old wooden flume.

gas analyses were made of the air from the interior of the pipe and analyses were made of gases derived from burning protective coating removed from these pipes and tested in the laboratory. As a result of these analyses the conclusion was reached that the explosion and fire were caused by ignition of gases resulting from partial combustion of the coating on the interior of the pipe in combination with a certain amount of unburned acetylene gas from the cutting torch. It is now the practice to test the atmosphere inside of pipes when construction work is being undertaken and to provide adequate ventilation while the work is going on.

Soil Tests:

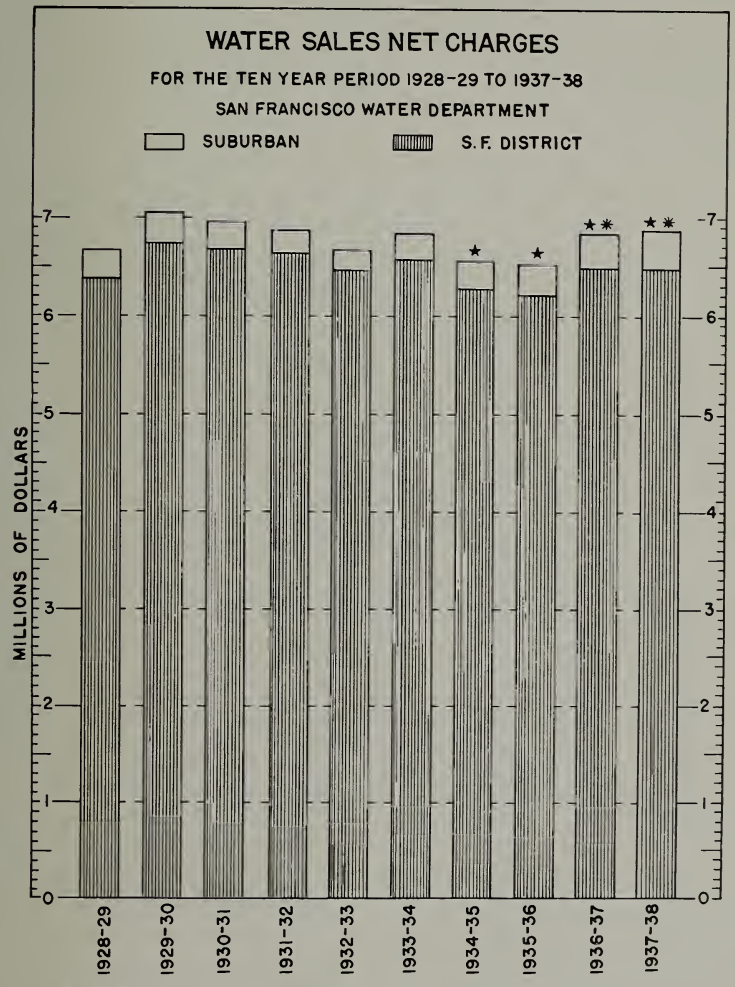
During the year, a large number of soil tests were made along the route of new lines to be constructed and along existing lines to determine what type of protective coating would be advisable for the new lines. A large part of this work was done on the new Palo Alto pipe line. When the portion of the pipe line in the Palo Alto line was removed from the Corral Hollow line, it was found that some of the pipe from the Corral Hollow line was badly corroded. Following this, an extensive electrolysis and soil investigation was made of the Corral Hollow pipe line. This work, involving several hundred soil samples, had not been entirely completed at the end of the fiscal year.

Electrolysis:

A complete electrolysis survey of the two Bay Crossing pipe lines from Irvington Portal to the Pulgas tunnel was made during the year and an electrolysis survey was also made of the Corral Hollow pipe line. Unfortunately, a portion of the Corral Hollow pipe line had been removed before this survey was started which probably altered conditions but as much data were gathered as possible of existing conditions at the time of the survey. Reports of these two electrolysis surveys had not been entirely completed at the end of the fiscal year.

Corrosion:

A study of the problem of pipe corrosion has been continued along the lines outlined in the last annual report. Several new activities have been undertaken in connection with this work. Studies of rate-of-corrosion of test specimens suspended at various points on the water system have been continued. The method of placing these test specimens has been changed to give more careful control of the water and a large number of determinations of corrosion rates have been made. This work is being continued. Field and laboratory tests on calcium carbonate saturation index of the water supply have been continued. In the laboratory, numerous series of experiments have been carried out to determine the most suitable chemicals and treatment required by water from the several sources to render the supply non-corrosive. The experimental lime plant at Hetch Hetchy Junction, which was started in the last fiscal year, was kept in operation throughout the current fiscal year until February 10, 1938. At that time, delivery of Hetch Hetchy water was discontinued. Varying quantities of lime, limestone, and a combination of the two chemicals, were applied to the Hetch Hetchy Aqueduct at this point. Inspections of the San Joaquin Valley pipe lines have been made and also of the Bay Crossing pipe lines on several occasions to note the effect of this treatment. Chemical tests of the water have also been carried on at regular intervals. This experimental work, carried on over a period of a year, indicated that the lime treatment was most satisfactory in correcting the corrosive tendency of this soft water. During the period of operation, the flow in the Hetch Hetchy Aqueduct was only seven million gallons daily but fairly satisfactory results were obtained with this treatment. A permanent plant for installation at Hetch Hetchy Junction is now being designed and it is proposed that regular lime treatment of the water at this point be made when regular draft from the Hetch Hetchy is resumed. Investigation of complaints regarding rusty water and bursting or leaking pipes has been continued. These troubles are reported occasionally from widely scattered parts throughout the City, indicating that conditions with respect to corrosion are general and not confined to any particular district. Lime treatment of the entire supply entering the City has been recommended to minimize this trouble. Plants to apply lime to the water at the three principal outlets of the Peninsula reservoirs are now under design. A series of tests have been conducted in the laboratory over the past year to determine the corrosive effect of the water supply on various pipe materials and to determine what type of corrective treatment is best suited. A series of small pipes, each two feet long, are undergoing tests of raw and lime-treated water. These pipes are of black iron, galvanized iron, brass, copper, and cement-lined iron. One set is undergoing a test with cold water, the other with hot water. Another set of black iron pipes is receiving sodium silicate treatment with a control of untreated water. Tests of these various materials and methods of treatment will be continued probably for several years.



★ RATES REDUCED 10% ON DECEMBER 1, 1934.

✱ ADDITIONAL REDUCTIONS TO LARGE USERS AMOUNTED TO $29,903 IN 1936-37 AND $169,213 IN 1937-38.

Hetch Hetchy Construction Camp Sanitation:

Sanitation of the construction camps on the Hetch Hetchy project, and particularly of the camp at the O'Shaughnessy Dam, was supervised by this division. The disposal of wastes at these camps was carefully watched and the sewage disposal plants at O'Shaughnessy Dam regularly inspected. The work of enlarging the dam was completed during the year and the temporary sewage disposal facilities for the camp were removed. There remains in operation at the dam site a sewage disposal plant to take care of the wastes from the keeper's residence and other buildings, which is regularly inspected.

General:

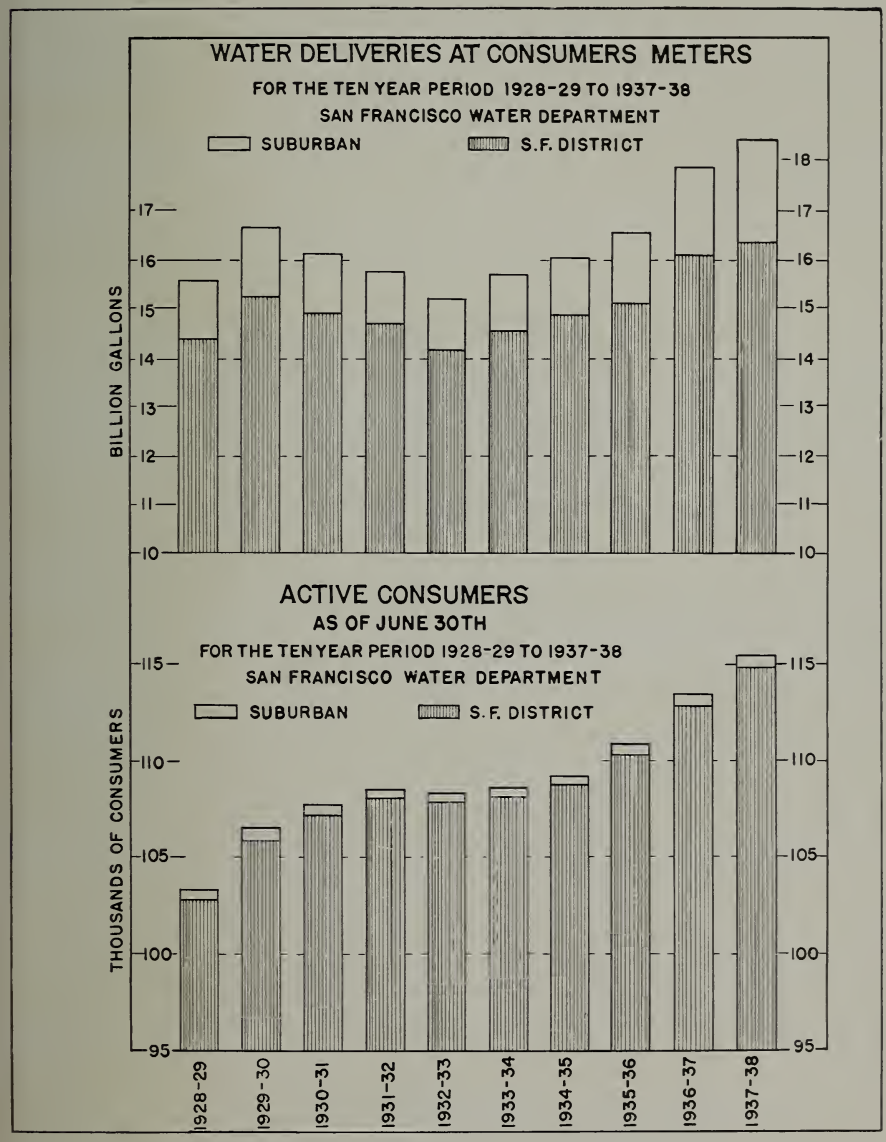
The Purification Division cooperates with other divisions of the Department in supervision of sanitation, water treatment and scientific investigation, and in the design of any new structures or plants connected with purification operations. Like cooperation has been extended to the Exposition authorities in problems connected with corrosion and treatment of water supply.

WATER SALES DIVISION

Gross Water Sales for the year were $6,882,545. Deduction of allowances, refunds and losses amounting to $22,752 leaves net sales of $6,859,793, an increase of $37,734 or 0.55 per cent, as compared with the fiscal year 1936-37. Sales for the six months' period, July to December, 1937, covered in this report were subject to "Special Rates" effective January 1, 1937 established as an inducement to promote the sale of "Surplus Water." Sales for the six months' period, January to June, 1938, were subject to rate reduction effective January 1, 1938 which affected only those consumers using in excess of 33,300 cubic feet per month. For the same water deliveries, net sales would have totalled $7,029,006, an increase of $206,947 had not the new "Special Rates" and rate reduction been in effect. The result of these reduced rates is reflected in an apparent saving of $169,213 participated in by a monthly average of 322 consumers representing an average of 23 in the Suburban District and 299 in San Francisco. Of the total indicated saving Suburban Accounts represent $83,808. In connection with the sales record, comparison of charges for the past two years is shown in Non-Paying Municipal Accounts. These sales for the year 1936-37 totalled $421,262 as against $438,823 for the year 1937-38, an increase of $17,561 which would have been $39,086 at the old rates.

The total amount of bills in Suspense is $5,395.31 most of which may be considered collectible. Bills written off during the period amounted to $3,418.02, a decrease from the previous year of $1,437.56. Of the total written off, $636.79 is accounted for in Board of Trade and Bankruptcy proceedings as compared with $625.05 in the preceding fiscal year. We hold in active suspense those accounts for which we receive dividends or partial payments from the Board of Trade or from Receivers until such time as they are definitely closed issues; any remaining unpaid balances are then included in write-off. Accounts totalling $1,788.04 are now being handled in this manner.

The record of service and distributor installations shows 2,280 as against 2,321 last year, a decrease of 41. This decrease is slightly less than 2 per cent of the installations recorded during the year 1936-37. There are 116,447 active services, all metered, of which 114,146 are revenue producing and 2,301 are temporarily shut off, an increase of 1,747.


WATER DELIVERIES AT CONSUMERS METERS
FOR THE TEN YEAR PERIOD 1928-29 TO 1937-38
SAN FRANCISCO WATER DEPARTMENT
SUBURBAN
S.F. DISTRICT
BILLION GALLONS
18
17
16
15
14
13
12
11
10
ACTIVE CONSUMERS
AS OF JUNE 30TH
FOR THE TEN YEAR PERIOD 1928-29 TO 1937-38
SAN FRANCISCO WATER DEPARTMENT
SUBURBAN
S.F. DISTRICT
THOUSANDS OF CONSUMERS
115
110
105
100
95
1928-29
1929-30
1930-31
1931-32
1932-33
1933-34
1934-35
1935-36
1936-37
1937-38

Building permits issued for the year show a loss of 847, for a decrease of $3,561,313. Permits issued for the year were 7,292 for a total of $19,197,420. Frame structures almost wholly residential constructions account for 42 per cent of the value shown, indicating continued activity in home building. The activities of builders and contractors are closely followed and water deliveries carefully checked during construction and installation work. A total of 2,476 jobs were handled, reflecting a decrease of 288 over the previous year. The work included inspection of an average throughout the year of some 828 residences in course of construction, large sewer installations, sewage disposal system, new high pressure fire lines and cisterns, installation of distributing mains, installation of feeder mains from new reservoirs in the City, street widening, grading and paving in subdivisions and construction of new boulevards. In addition, daily contact was necessary with contractors engaged in the construction of the Interurban Terminal Building and its approaches to the San Francisco-Oakland Bay Bridge.

Our collection record indicates but slight change as compared with last year. The procedure remains the same including the use of a third Shut-Off Collector whenever possible to do so in an endeavor to offset the loss of effort in this phase of collections due to the necessity of using one of these men for emergency relief when illness or accident has deprived us of the services of a Shut-Off Man in the Service and Supply Section. In addition, his services are also required to help absorb heavy demand in outside activity of this Section for two or three days twice a month at which times there is peak movement of consumers to new addresses. The ratio of collections to net sales for the fiscal year 1937-1938 was 93.8 per cent, identical with the fiscal year 1936-1937. Branch bank agencies remaining at 92 collected 32.5 per cent of the total bills issued, an increase of nine-tenths of one per cent over last year, while our regular department collectors handling 84.7 per cent of the bills issued collected 29.1 per cent, a decrease of 1.4 per cent. The average number of bills handled by regular collectors per man-day was 231, the same as the prior year and the average collected per man-day decreased from 70 to 67. Activity of our motorized special collector continues to show favorable results, the record showing that 58.3 per cent of the total bills handled were collected as compared to 59.9 per cent the previous year. The percentage of delinquent bills as of June 30, 1938 carrying unpaid balances of one month or more decreased two-tenths of one per cent. Results of consistent effort to reduce the amount of unpaid balances is shown in a percentage comparison of total delinquencies on June 30th as follows:

1934—34.7 per cent
1935—28.1 per cent
1936—27.5 per cent
1937—25.3 per cent
1938—25.1 per cent

Statistics and data relative to the activities of the Sales Division are appended.

ENGINEERING

The Engineering Division has had an active year in the design, preparation of specifications and supervision of construction and maintenance work and the carrying on of normal operating activities. Plans and specifications were prepared for thirty-two contracts which were awarded at a total bid price of $603,825.34, and engineering and inspection work was done on thirty-seven jobs, involving $2,145,913.90 of contract work, completed during the year.

Extensive hydraulic studies were made with the use of a 1/40 scale model of the Calaveras spillway and creek bed below, to determine the best design for replacing the stilling pool which was damaged during the flood period in February. As a result of these model studies and experiments a considerable saving, both in size and cost, was made in the final design of the spillway stilling pool.

The Department also cooperated with the San Francisco Bay Exposition Company and the United States Army Engineers in the construction of the Bay Bridge pipe line and pumping station to supply water to the Golden Gate Exposition. Owing to the expansion and contraction of the bridge, the design of the pipe line presented many technical difficulties. The plans and specifications, including the design of special joints to meet a total movement of the bridge deck of approximately 5 feet, were prepared by this Department. The contract was let by the War Department and the installation was done under Army supervision with the Water Department collaborating in an unofficial capacity.

The construction of this line was financed by the Exposition Company. Under terms of an agreement between them and the City, the Water Department has taken over the pump station and pipe line in exchange for water to be furnished to the Exposition up to the amount of the cost of the works.

Another major activity during the year was a detailed valuation and depreciation survey of all the physical properties and structures of the Water Department. Under the provisions of the charter it is required that a survey of this character be made during the fiscal year 1937-38 and every five years thereafter.

Various other small jobs were done for the Water Department and other City Utilities.

The completion of the Sunset reservoir on June 24, 1938, brought to a close the $12,095,000, 1933 P.W.A. construction program. Total expenditures, including interest during construction, on this project were $12,059,790.56 at June 30, 1938.

Work under the $371,093, 1935 P.W.A. project will be finished shortly with the completion of the Pulgas Outfall Temple.

Following is a brief description of construction work performed under contract during the past year:

Contracts Let Under 1933 Bond Issue—P. W. A. Docket No. 1510:

1. Crystal Springs-University Mound Pipe Line No. 2:

This pipe line extending from Crystal Springs impounding reservoir to University Mound distributing reservoir is 100,982 feet long. It consists of 79,530 feet of 60-inch diameter pipe, 649 feet of 78-inch diameter pipe, and 4,046 feet of 60-inch steel pipe lined tunnel, built under the 1933 P.W.A. Bond Issue, and 16,757 feet of 54-inch pipe built in 1903. Its normal operating capacity is 53 million gallons daily.

A more complete description of this work has been included in previous reports. All work was completed during the past year under Contract No. 112, which was the last of four contracts under which this line was built.

Contract No. 112—For the construction of the Crystal Springs Pipe Line No. 2, Crystal Springs to Burlingame Section, covered the laying of 24,284 feet of 60-inch x ⅜-inch welded steel pipe from Crystal Springs Dam to the existing 54-inch pipe at Burlingame to complete construction of this new transmission line to

BAY BRIDGE PIPE LINE
Ten-inch line installed on Bay Bridge to serve 1939 Exposition. View shows arrangement for compensating for expansion and deflection of the Bridge at Pier W-2.

the University Mound reservoir in San Francisco. Also included were the installation of the stand pipe and control works in the Crystal Springs outlet tower and 649 feet of 78-inch x ½-inch welded steel pipe in the outlet tunnel. This contract, awarded to Williams Bros. and Haas, Inc., on December 31, 1936, was completed on December 31, 1937, for a contract cost of $658,615.26.

2. *University Mound Reservoir Addition:*

This is a second basin at the University Mound reservoir. It is a cut and fill reservoir with concrete lining and concrete roof. This basin has a capacity of 85.8 million gallons. Basin No. 1, originally built in 1885 and raised in 1924, has a capacity of 59.4 million gallons. It is also concrete lined but has no roof.

A more complete description of this project has been included in previous reports. The reservoir was completed during the past year under Contract No. 111, which was the second of two contracts covering the work.

Contract No. 111—For the Concrete Lining, Roof and Control Works for the University Mound reservoir addition, was awarded to MacDonald and Kahn Company, Ltd., on November 2, 1936, and work was completed on December 31, 1937, at a contract cost of $680,020.87. Major items of work included the placing of 24,598 cubic yards of concrete, reinforced with 1,646 tons of steel and 54,546 square yards of wire mesh, the installation of 1,075 feet of 60-inch steel pipe, electrically operated traveling waterscreens and miscellaneous valves and fittings for the control works and connections.

3. Sunset Reservoir and Connecting Pipes:

This unit of the P.W.A. program covered the construction of the first basin of a new distributing reservoir in the Sunset Heights district together with a 54-inch supply line and a 60-inch discharge main. The reservoir is concrete lined and roofed, similar to the University Mound Addition, and has a capacity of 90 million gallons, and will supplement the 44-million gallon Lake Honda reservoir built in 1861.

Four contracts were awarded for this construction. The contracts for the 54-inch supply line and for the reservoir excavation and embankment were completed and described in previous reports.

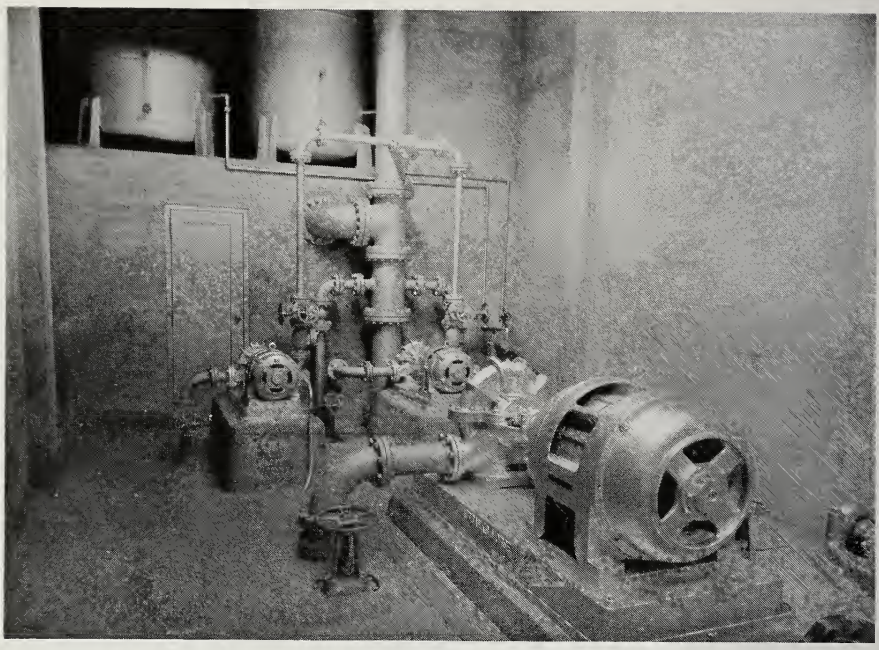
Contract No. 120—For construction of the Concrete Lining and Roof and the Installation of Control Works for the Sunset reservoir, was awarded to MacDonald & Kahn Co., Ltd., on July 8, 1937, and completed on June 24, 1938. The roof is of reinforced concrete supported on columns spaced on 25-foot centers, having a maximum height of 32 feet. The roof area is 517,000 square feet, being 26,000 square feet greater than the University Mound addition. Major items of this contract were the placing of 25,904 cubic yards of concrete reinforced with 1,726 tons of steel and 58,006 square yards of wire fabric, the installation of 1,037 feet of 60-inch and 885 feet of 54-inch welded steel pipe, together with valves and fittings for the control works and electrically-operated traveling water screens. Total contract cost was $780,234.95.

Contract No. 108—For the Laying of the 60-inch Steel Sunset Discharge Main, was awarded to Williams Bros. and Haas on October 25, 1937, and was completed June 14, 1938. A total of 9,320 feet of 60-inch x 5/16-inch welded steel pipe was installed for a contract cost of $222,184.65. This 60-inch pipe was laid in 28th Avenue from the Sunset reservoir to Kirkham Street and in Kirkham Street to Seventh Avenue where it was connected with the existing 30-inch and 36-inch mains serving the distribution system heretofore supplied by Lake Honda reservoir.

Contracts Let Under 1935 P. W. A. Grant—P. W. A. Docket No. 1132:

The work previously intended under this docket had been completed at June 30, 1937, and has been described in previous reports. An extension of time was granted by the Government to enable the Department to use up a remaining balance of the Government grant. These funds were used to construct the Pulgas Water Temple at the terminus of the Hetch Hetchy Aqueduct system.

Contract No. 166—Provided for the construction of a temple and other improvements at the Pulgas Outfall. The temple is of ornamental cast stone, 25 feet in diameter from center to center of columns, and rises 60 feet above the surface of the ground. The substructure contains a circular weir 12 feet in diameter over which flows all water entering the Crystal Springs reservoir by way of the Pulgas tunnel. Also provided for were 7,000 cubic yards of fill and grading for landscaping and 3,600 square feet of crushed rock and stone walks. Contract for this work was awarded to W. O. Tyson for an estimated contract price of $37,318.40 on January 14, 1938. The heavy rains of last winter caused considerable delay in the prosecution of the work but at June 30, 1938, it was 87 per cent complete.



BAY BRIDGE PUMP STATION
Located in base of Bridge Pier W-1. This station supplies water to Golden Gate International Exposition and Yerba Buena Island. Capacity 2½ million gallons daily.

Contracts for Normal Additions and Betterments:

The following contracts were financed from operating revenues or from consumers' deposits under the Department's refunding rules:

1. Additions to City Distributing System:

In all cases, excepting the two noted, where cast iron pipe was laid or where services were installed, the Department furnished the pipe, fittings and service material in addition to the contract price.

Contract No. 147—For the Laying of 881 feet of 6-inch cast iron pipe and the Installation of 9 services in 30th and 45th Avenues in the Parkside area, was awarded to the San Francisco Water Department on August 9 and was completed September 11, 1937, at an earned contract price of $1,005.82 and at an actual cost of $899.72.

Contract No. 149—Covered the Laying of 1,160 feet of 8-inch cast iron pipe in Harrison and 16th Streets from 15th Street to Bryant Street. The contract was awarded to E. J. Treacy on August 9th and was completed on October 7, 1937, for a contract cost of $1,497.13.

Contract No. 151—Provided for the Laying of 308 feet of 2-inch cast iron pipe in Greenwich Street, 154 feet of 2-inch pipe in Harwood Alley, 286 feet of 6-inch cast iron pipe in Arkansas Street and 266 feet of 8-inch cast iron pipe in 22nd Street. This contract was awarded to the San Francisco Water Department on

August 23, 1937, and work was completed on September 22, 1937, at an earned contract price of $1,527.87 and at an actual cost of $1,197.87.

Contract No. 152—For the Laying of miscellaneous pipe lines in San Francisco, was awarded to E. J. Treacy on October 11, 1937, and was completed on January 6, 1938, for a contract cost of $5,628.55. The following cast iron pipe was laid under this contract:

1,375 feet of 6" in Bemis Street, Castro to Miguel
1,480 feet of 6" in Laidley Street, Castro to Miguel
551 feet of 6" in North Point Street, Taylor to Mason
252 feet of 6" in Donahue Street, Innes to Hudson
667 feet of 8" in 37th Avenue, Kirkham to Judah
230 feet of 8" in 18th Street, Harrison to Bryant
330 feet of 12" in Spear Street, Harrison to Yerba Buena Pumping Plant.

Contract No. 154—For the Laying of 541 feet of 16-inch cast iron pipe in Van Ness Avenue from North Point Street to Bay Street, was awarded to E. J. Treacy on October 25, 1937, and was completed January 4, 1938, for a contract cost of $1,436.08.

Contract No. 155—Covered the Laying of 839 feet of 4-inch cast iron pipe in Shipley Street, 442 feet of 4-inch cast iron pipe in Topeka Street, and 224 feet of 8-inch cast iron pipe in Silver Avenue. Also included was the installation of 27 services. This contract was awarded to E. J. Treacy on October 19 and was completed December 24, 1937, for a contract price of $1,591.16.

Contract No. 158R—For the Laying of 218 feet of 2-inch and 405 feet of 6-inch cast iron pipe, and the installation of 36 services in Encline Court, was awarded to W. J. Tobin on December 13, 1937, and was completed on February 6, 1938, for a contract cost of $729.82.

Contract No. 160—For the Laying of 2,020 feet of 8-inch cast iron pipe in 19th Avenue, Taraval to Wawona Streets, was awarded to W. J. Tobin on December 27, 1937. Work was completed on February 17, 1938, at a contract cost of $1,068.52.

Contract No. 161—Covered the Laying of 1,299 feet of 6-inch cast iron pipe in Winding Way and Naylor Street and 495 feet of 8-inch cast iron pipe in Phelps Street. This contract was awarded to the Lowrie Paving Company on December 13, 1937, and work was completed on January 4, 1938, for a contract cost of $1,719.79.

Contract No. 162—Covered the Laying of 1,240 feet of 4-inch, 539 feet of 6-inch, and 674 feet of 8-inch cast iron pipe in Geneva Terraces, and the laying of 663 feet of 8-inch cast iron pipe in Mt. Davidson Subdivision. Also included was the installation of 130 services. Contract for this work was awarded to E. J. Treacy on December 13, 1937, and was completed on April 25, 1938, for a contract price of $2,163.09.

Contract No. 164—For the Laying of 623 feet of 6-inch cast iron pipe in Sweeny Street, Bowdoin to Boylston, 431 feet of 8-inch cast iron pipe in De Haro Street, 16th to 15th Streets, and the installation of 31 services, was awarded to W. J. Tobin on May 9, 1938. Work was completed June 7, 1938, at a contract cost of $695.98.

Contract No. 167—Provided for alterations and repairs to the keeper's house and construction of a garage at the University Mound reservoir. This contract was awarded to Peter Sartorio on January 28 and work was completed on April 29, 1938, for a contract price of $2,221.00.

PALO ALTO PIPE LINE
This new transmission main, to serve Menlo Park, Palo Alto, Stanford University and Sunnyvale, has a capacity of 14 million gallons daily. View shows pipe in trench at Menlo Park.

Contract No. 168—For the Laying of 756 feet of 6-inch and 135 feet of 8-inch cast iron pipe, and the installation of 48 services in 29th Avenue, Pacheco to Quintara, was awarded to Martin Murphy on February 14, 1938. Work was completed April 6, 1938, for a contract cost of $555.01.

Contract No. 170—For the Laying of 241 feet of 4-inch cast iron pipe and the installation of 18 services in Shawnee Avenue, Delano Avenue West, was awarded to Martin Murphy on February 2, and completed April 5, 1938, for a contract cost of $455.65.

Contract No. 171—For the Laying of 546 feet of 4-inch cast iron pipe in Hunter's Point Boulevard, and 1,285 feet of 8-inch cast iron pipe in Silver Avenue, was awarded to E. J. Treacy on March 15, and was completed May 7, 1938, at a contract price of $1,495.44.

Contract No. 173—Covered the Laying of 2,634 feet of 6-inch and 32 feet of 8-inch cast iron pipe in 15th Avenue, 325 feet of 8-inch cast iron pipe in Montgomery Street, and 414 feet of 8-inch cast iron pipe in Market Street. Also included was the installation of 48 services. This contract was awarded to the Fay Improvement Company on March 28, 1938, and was completed on May 18, 1938, at a contract cost of $3,165.64.

Contract No. 174—Provides for the replacement of the tubes in the two Wheeler condensers at the Central Pumping Station. Contract for this work was awarded to the California Steel Products Company on April 11, 1938, for a lump sum bid of $4,210.00 and had not been completed at June 30, 1938.

Contract No. 175—Covered the installation of 33 services and the laying of the following 6-inch cast iron pipe:

256 feet in Esmeralda Avenue, Elsie to Winfield
650 feet in 41st Avenue, Kirkham to Lawton
502 feet in 48th Avenue, Geary to Anza
788 feet in Sweeny Street, Bowdoin to Colby.

This contract was awarded to the Lowrie Paving Company on April 11, 1938, and work was completed May 18, 1938, for a contract price of $1,838.01.

***Contract No. 176**—For the Laying of 1,350 feet of 6-inch cast iron pipe and the installation of 12 services in Gerard, Mansell and Arlington Streets, was awarded to E. J. Treacy on June 13, 1938, for an estimated bid price of $2,575.60. As of June 30, 1938, no work had been done on this job.

***Contract No. 177**—For the Laying of 360 feet of 4-inch, 847 feet of 6-inch and 804 feet of 8-inch cast iron pipe and the installation of 36 services in Lakeside Subdivision No. 2, was awarded to W. J. Tobin on June 13, 1938, and was completed June 18, 1938, at a contract cost of $3,839.60.

*NOTE: The contract prices on these two jobs include the cost of pipe, fittings and service material furnished by the Department.

2. *Additions To Supply and Transmission Facilities:*

Contract No. 150—Covered the reconstruction of the Pilarcitos reservoir spillway. The old spillway depended on manual operation of the gates and consisted in part of a wooden flume that had reached an advanced stage of deterioration. Two of the three old gates were removed from the gate tower and reinstalled in a new concrete overflow entrance structure to the spillway tunnel. Also the wooden flume leading from the tunnel to the stilling pool was replaced with a rectangular concrete channel. Major items of this work were 462 cubic yards of excavation and the placing of 938 cubic yards of reinforced concrete. This contract was awarded to W. J. Tobin on August 23, 1937, and was completed December 10, 1937. Contract payments totalled $27,698.25.

Contract No. 156—Provided for the Laying of the Palo Alto pipe line, and was awarded to Macco-Robertson, Ltd., on October 25, 1937, for an estimated bid price of $213,620. This line is 27,995 feet in length and extends from the Redwood City valve house on the Bay Crossing Pipe Lines to California Avenue in Palo Alto, and in general is adjacent to and parallels the Southern Pacific Railroad in San Mateo County and is in either the State Highway or the Stanford University property in Santa Clara County. The line is 36-inch by ¼ inch welded steel pipe, removed from the Corral Hollow line and thoroughly reconditioned before being installed in the new line. As of June 30, 1938, this work was 91 per cent complete and it is expected that delivery of water to the City of Palo Alto will be made early in August.

Contract No. 159—Covered the placing of 4,490 cubic yards of riprap pavement on the easterly end of the San Andres Dam. Rock was obtained from a quarry on the City's property and was placed on the dam to an approximate thickness of 24 inches. This contract was awarded to W. O. Tyson on November 22, 1937, and was completed March 10, 1938, at a contract cost of $11,639.50.

Contract No. 163—Provided for constructing a 5-foot addition to the forebay structure and vent shaft at the Bald Hill outlet tunnel from the San Andres reservoir. This work was necessitated by the raising of the San Andres dam

PALO ALTO PIPE LINE
Steel bents on concrete piers support pipe over San Francisquito Creek.

which reduced the freeboard on these two structures to a dangerous point. This contract was awarded to Miller & McGillis on December 13, 1937, and was completed February 18, 1938, for a contract price of $1,109.29. In addition to this cost, the Department furnished 4.67 thousand board feet of redwood lumber which was installed by the contractor.

Contract No. 169—Covered renovation and alterations to Sunol and Calaveras cottages. The Calaveras cottage, built in connection with the construction of the Calaveras dam, is about 25 years old and after the completion of the dam was used by the Spring Valley Company as a guest house. Under this contract it was reconditioned and altered so as to be suitable for living quarters for the ranger stationed here, his old quarters having become untenantable. Work on the Sunol cottage consisted of applying Celotex insulating board to the interior of the dining room, living room and one bedroom, and the painting and papering of these rooms. Contract for this work was awarded to A. Frederick Anderson on March 15, 1938, and was completed June 7, 1938, for a contract price of $2,537.66.

3. Miscellaneous:

Contract No. 142—Covered the furnishing and installing of a "Carrier" automatic air-conditioning system for the first and mezzanine floors of the Mason Street office building. The system is designed to maintain an average year around temperature of 72° F. and an average relative humidity of 50 per cent. It also supplies conditioned air to the janitor's office and the vault in the basement and relieves the excessive heat condition over the boiler room. The contract for this work was awarded to Cochran & St. John, Ltd., on July 12, 1937, and was completed October 26, 1937, at a contract price of $5,712.

Contract No. 146—Covered the repaving of street and sidewalk openings made by the Department for installation or repair work during the fiscal year 1937-38. The contract was awarded to the Lowrie Paving Company on June 28, 1937, and terminated June 30, 1938. Payments under this contract totalled $28,026.39. Repaving over pipe trenches opened by contractors was not included under this contract as each contractor provided for his own repaving under the various pipe-laying contracts.

Contract No. 148—For alterations on the sixth floor of the Mason Street office building, was awarded to Frank J. Reilly Company on August 9, 1937, and was completed on October 29, 1937, for a contract price of $4,831.00. The work consisted of removing walls and partitions to increase the usable area of floor space and the installation of Celotex acoustical board on the ceilings.

Contract No. 165—Covered the installation of a 1500-pound capacity, plunger, electric type, sidewalk elevator in the Mason Street office building. This contract was awarded to the San Francisco Elevator Company on December 14, 1938, and work was completed March 30, 1938, for a contract price of $1,647.00.

AGRICULTURAL DIVISION

As of July 1, 1938, the land owned in fee was 63,878.587 acres, or an increase of 35.303 acres over the acreage shown in the past annual report, which increase is accounted for as follows:

In San Francisco County—			
Purchases for Sunset Reservoir		2.251 acres	
Area corrections		.183 acres	
		2.434 acres	
Decreases:			
Parcel No. 22—Widen Phelan Ave.	.009		
Parcel No. 57—Street crossings	.429	.438 acres	
Net increase			1.996 acres
In San Mateo County—			
Additions: Palo Alto Pipe Line		.324 acres	
Decreases:			
Parcel No. 12—Junipero Serra Blvd.	.045		
Parcel No. 17—El Camino Real	.151		
Parcel No. 18—Junipera Serra Blvd.	.114	.310 acres	
Net increase			.014 acres
In Alameda County—			
Increase: Hetch Hetchy Right of Way from Calaveras West Portal (Roney) to Western Pacific Railroad R/W north of Irvington transferred to Water Department jurisdiction			33.293 acres
Total net increase			35.303 acres

Of the total 63,878.587 acres, there are at present under lease about 34,412 acres under 163 leases. The leased area is less than last year by 297 acres, which is accounted for, mainly, by the expiration of the Park Commission lease on the Harding Golf Course on the Lake Merced Ranch, 170 acres, and the lease of the Municipal Properties Company on the Crystal Springs Watershed, 138 acres, which Company has been defunct for a number of years past but the lease has never been surrendered (now held by the San Francisco Bank).

The following tabulation presents a summary of the Water Department holdings and leases, showing the distribution of acreage, number of tenants and rentals in the several counties:

SUMMARY

District	Total Acreage	Leased Acreage	No. of Tenants	Cash Rentals	Share Crop Rentals
Alameda, Santa Clara Counties—					
Sunol District	37,158.920	32,836.73	44	$22,518.47	$5,767.94
Pleasanton District	872.668	665.45	12	6,388.07	566.81
Niles	741.724	308.047	48	1,730.57	
Hetch Hetchy R/W	121.246	10.00	1	120.00	
	38,894.558	33,820.227	105	$30,757.11	$6,334.75
San Mateo County—					
Watershed	22,767.683	355.169	6	6,643.18	
Outside Watershed	1,069.723	171.395	30	4,169.59	74.76
Hetch Hetchy R/W	198.311	29.360	2	610.00	
	24,035.717	555.924	38	$11,422.77	$74.76
San Francisco County	948.312	35.670	20	4,579.77	
Grand Totals	63,878.587	34,411.821	163	$46,759.65	$6,409.51

Of the leases taken over from the Spring Valley Water Company in 1930, there are still active, viz., (1) Eaton & Smith on a month to month basis for Parcel No. 31, San Francisco County Lands, (2) Empire Mines & Investment Company, expiring October 12, 1970, for a portion of the Crystal Springs Watershed adjoining the former Bourn Estate, now belonging to Matson Securities Company (W. P. Roth), and (3) The Olympic Club, expiring May 31, 1941, for a portion of the Lake Merced Lands adjoining the Lakeside Golf Course.

In the matter of the Empire Mines & Investment Company lease, this lease was transferred by deed together with the Filoli Estate property to the said Matson Securities Company but no mention is made that said lease was transferred to the City and County of San Francisco. It appears that the City, in accepting the deed from the Spring Valley Water Company, gave its approval to this lease and, as the lease has still many years to run, it is felt that the San Mateo County records should show, by resolution of the Public Utilities Commission, that the City is now the owner of the land included in this lease.

The lease of 485 acres at Pleasanton to the Grand Junction Sugar Company was mentioned in the last annual report, and the improvement in this property is now apparent. A very fair crop of beets was harvested this past season from the entire acreage leased, amounting to about 4,800 tons. Due to the weedy condition of this property, the expense of producing this crop was unusually heavy. Since the operation of the Pleasanton Pumps has ceased, there has been a very

considerable rise in the water table and due to the heavy rainfall this past winter several of the wells on this property were flowing, so that a considerable acreage became swampy. During the long period of dry years, many of the branch drain ditches, which formerly drained this area, were filled in so that it became necessary to provide temporary ditches in order to drain the overflowed land. In order to help the drainage, a large block of concrete at the upper side of the culvert at the end of the main ditch was removed by the department, which served to increase the depth in the main ditch about three feet. It is proposed to deepen the main ditch this fall and to re-open the lateral ditches so as to place all of this property under adequate drainage. The greater part of this work will be done by the Sugar Company. For the present season there are about 25 or 30 acres which the tenant will be unable to farm due to the saturated condition of the soil.

The Park Commission has continued the use of the Harding Golf Course on the Lake Merced Ranch although the lease expired June 30, 1937. Mention has been made in each annual report of the failure of that Commission to pay any rentals to the Water Department, which, at the expiration of the lease, amounted to $77,263.

Due to an increase in the selling price of cattle for the lease year 1937-38, the leases which were based on such prices in 1934 were increased 19.32 per cent over the minimum base rentals stated in the leases. Most of these leases expired on October 31, 1937, but due to the very severe winter of 1936-37 the cattle suffered heavy losses both through deaths and loss of weight—in consideration of these conditions all the leases of these tenants were extended for one year. The increases in rentals due to the higher selling price of cattle amounted to $2,949.95.

All of these cattle-grazing leases, with two exceptions, are being submitted to bids for the 5-year term beginning November 1, 1938, under the same general terms and conditions except that the amount bid will be based on an average selling price of 8⅛ cents per pound which is approximately what was paid this present year and will be the amount of rental for the lease-year of 1938-39. In the event of a lower average price thereafter, there shall be a reduction of 1 per cent of the amount for each one-eighth of a cent per pound less, but no reduction below 5¾ cents per pound average. The increase in rental is the same as formerly, viz., 1 per cent for each one-eighth cent. It is quite evident that if the above leases had continued in force and the rentals determined in accordance with market price the end of July, 1938, there would have been a decrease as compared with the present year, due to the depression. An important increase in rental for this coming lease-year is due to the lease of the Grand Junction Sugar Company, from $4,365.00 to $7,275.00.

The amount of unpaid rentals on June 30, 1938, was $9,315.36 of which sum $3,888.72 is classed as non-agricultural and $5,426.64 as agricultural rentals. In connection with the agricultural rentals, the largest item is $1,329.79, due from a tenant who died as the result of an accident. It will be necessary to await the probate of his estate before this payment will be made. The amount due from the estate of another tenant who died during the year, amounting to $1,105.59, will be paid when cattle on this lease are sold. Other large agricultural rentals will be paid as soon as cattle are sold and none are uncollectible except, possibly, some nominal amounts.

Share Crops:

In the year 1936 there were 17 tenants farming some 1,700 acres on a share-crop basis. This acreage was reduced in 1937 to 1,200 acres farmed by eleven tenants. This reduction was due to leasing for cash to the Grand Junction Sugar Company 485 acres formerly on a share-crop basis. The season of 1937 was not favorable due to intense cold and lack of rain during the early winter. The crops, however, were average, the return on the City's share amounting to $5,398.94 with unsold commodities in the warehouse valued at approximately $700.00.

The crops of the present season will be below the average due to too much moisture in the early spring months. Prices are below last year's, so that there will be a considerable reduction in returns from share crops, particularly as a large part of the planted grain will be cut for hay on account of rust in the oats and lack of rainfall during the ripening period of wheat and barley. A very large grain-hay crop has been cut throughout the State and the demand is limited.

Use of Lands Not Leased:

Almost all of the property which can be leased and for which suitable use can be found is at present under lease. The unleased lands consist of the following:

Sunol District—About 4,300 acres, in Calaveras reservoir and rim land; Calaveras, Laguna and Alameda Creek beds, and gravel lands adjoining; Sunol Walnut Orchard.

Pleasanton District—About 207 acres, in Laguna Creek, 50 acres of hill land in Parcel No. 69 and county roads.

Niles District—About 330 acres, in Alameda Creek and steep side hills in Niles Canyon adjoining, and marsh lands in Parcels Nos. 48 and 49.

Hetch Hetchy Right of Way in Alameda County—About 110 acres, most of the deeds to this property provide for surface use by the former owners.

Peninsula Watershed Lands—About 22,100 acres. In order to protect the Peninsula reservoirs from pollution, the Department objects to the leasing of this property, a large part of which would be suitable for grazing.

Lands Outside of Watershed in San Mateo County—About 900 acres, consisting of about 645 acres of marsh land, 43 acres of Lake Merced Ranch, 115 acres of Silva Tract, 25 acres in Baden-Merced Pipe Line right of ways, without surface rights, 40 acres in Aqua Pump Station and Reservoir lots, and various small lots in pipe lines, etc.

Hetch Hetchy Right of Way in San Mateo County—About 169 acres, chiefly in right of way through subdivisional lots on many of which the right to plant grass or gardens was reserved by the grantors. Use of the right of way for garden purposes has been encouraged by granting, through the Public Utilities Commission, revocable permits. Nineteen such permits have been issued.

San Francisco County Lands—About 912 acres, of which 745 acres are in the Lake Merced Rancho and 34.7 acres in the Balboa Terrace Reservoir Tract, and 131 acres in city reservoir, pump stations, Bryant Street Yard and pipe lines.

Walnut Orchard:

The crop for the year 1937 amounted to 179,954 pounds, valued by the California Walnut Growers Association at $23,808.71, which yield was 4 per cent less than the previous year's yield. The Association, due to necessity of marketing the largest crop in its history, reduced the price two cents per pound. The quality of the city crop was better than in 1936, which was not true of other orchards throughout the State. Final settlement for this crop will not be made until September or October, 1938, so that the net returns are estimated in the table attached.

As the 1937 crop was 32 per cent in excess of the average production for the years 1932 to 1936, the Walnut Control Board, under the Agricultural Adjustment Act, fixed 35 per cent of the crop as its share for disposal. This is the largest amount taken by this Board in the five years of its existence. The Association, not only by reduction in prices but by an active advertising campaign, strained every effort to dispose of this unusual crop, which appeared to be further hampered by the depression, with the result that there will be no carry-over to affect the sale of the new crop. Furthermore, indications point to a decreased yield in 1938 and a possible advance of one cent per pound in price compared with 1937.

The improvement in quality of the city's crop is without question due to the thinning out of interlacing branches and to the fertilizer applied in the winter of 1936-37. This improvement in quality should be continuous for several years. The orchard is in excellent condition and for the first time in several years there was no evidence of "die back" this spring. Payment for cull walnuts from the past season's crop was at the rate of 4.8 cents per pound as compared to six cents in the two previous years. The percentage of culls and blows in the crop was 7.55 as compared to 9.83 in 1936, and 16.1 in 1935. The percentage of merchantable nuts increased to 92.45 per cent in 1937 as compared to 90.2 per cent in 1936.

CROP AND VALUE DURING CITY OWNERSHIP

Year	Total Yield Pounds	Gross Value	Net Cash Paid by Association	Association Charges in % of Gross	Packing House Charges per Pound
1930	110,361	$23,905.44	$20,024.55	12.06	.0138
1931	91,570	13,778.73	12,272.73	10.90	.0091
1932	206,795	28,994.25	20,391.18	29.80	.0070
1933	153,080	23,635.21	17,905.45	†24.40	.0073
1934	136,672	18,039.52	13,236.00	†26.60	.0059
1935	209,095	27,359.11	22,719.87	†17.80	.0045
1936	187,605	27,865.13	24,947.57	‡11.73	.0046
1937	179,954	23,808.71	*20,544.93	§13.70	.0042

The contract for harvesting the 1937 crop was again awarded to C. H. Schween & Son of Pleasanton, the only bidder, at the rate of 2.93 cents per pound, the increase of .23 cent over the previous year being due to a higher wage scale for labor. Harvesting proceeded in the usual satisfactory manner.

*Estimated.
†Includes 30% of crop delivered to Control Board and loss in sale of same.
‡Includes 25% of crop delivered to Control Board and loss in sale of same.
§Includes 35% of crop delivered to Control Board and loss in sale of same.

Care of the Orchard:

The usual winter spray with heavy oil emulsion was applied somewhat later than usual due to heavy rainfall and wet condition of the soil. Two treatments with Bordeau Mixture for walnut blight have also been applied to that portion of the orchard where this disease occasionally appears. The walnut aphis appeared earlier than usual due to the mild winter but it is being controlled by its natural enemies. However, with favorable weather conditions this pest increases enormously and preparations have been made to dust the orchard as soon as it becomes necessary. Further thinning out of branches was done during the winter, with beneficial effect, also five large trees were removed where the branches seriously interlocked. Many of the trees are now becoming so large that this interlocking of branches occurs especially in the westerly portion of the orchard, so much so that arrangements should be made each year to remove a number of these trees. If this is not done, the deep shade not only affects production but also kills the small lower branches. Alternate diagonal rows should be removed in those areas where the condition is pronounced, which would allow a space of 80 feet between trees at right angles and a little over 57 feet on the diagonal. By this method, only one-half of the trees in the area would be removed while, if every other tree on right angle rows were taken out, it would be necessary to remove three-fourths of the trees. This 25 per cent could continue to bear for a number of years before further removal would become necessary. Removals should be made only where the trees interlock to such extent that the sunlight does not reach the ground beneath. This work can be done without cost to the city by arranging with individuals to do the work of grubbing out in exchange for the wood. A comparison of the crop with the deliveries to the Contra Costa County Walnut Growers Association from other orchards, as shown by its annual report for the years 1936 and 1937, indicates the high quality of the walnuts produced on the City orchard:

	Contra Costa County Walnut Growers Assn.		Sunol Walnut Orchard	
	1936	1937	1936	1937
Total Tonnage	3,362.5	4,439.25	93.8	89.98
Merchantable	80.9%	86.7%	90.17%	92.45%
Culls	14.9	10.8	7.0	5.2
Blows	4.2	2.5	2.83	2.35
Classification:				
Diamonds	35.5%	42.0%	85.6%	90.0%
Emeralds	30.5	36.0	11.4	9.2
Suntand	34.0	22.0	3.0	0.8
Grading:				
Large	59.5%	75.7%	50.8%	50.8%
Fancy	27.3	17.7	34.7	34.6
Baby	13.2	6.6	14.5	14.6
Average Price Obtained:				
Gross per Pound—Cents	12.1	11.6	14.9	13.2

It will be noted that our grading is below the average on account of the Franquette variety, which averages smaller than other types, but the high percentage of Diamonds and Merchantable makes a very considerable difference in price.

The importance of growing as high a quality of product as possible was never more important than it will be in the future, due to many young orchards coming into bearing and the annual increase in production. The very capable management of the California Walnut Growers Association has so far been able to make profitable those orchards which receive proper care, but in spite of the Association's warnings, planting still continues and the near future will undoubtedly see years of full production when it will be impossible to dispose of the entire yield. When that time comes the standard of quality will unquestionably be raised to such extent that only the best orchards can survive.

Fencing and Boundary Lines:

No further surveys of boundary lines in Alameda and Santa Clara Counties have been made since the winter of 1935-36, and no new fences were built during this past fiscal year. Repairs to some line fences were necessary and this work was done by the adjoining property owner and our tenants, the material being furnished by the Water Department.

Arrangement has been made to fence that portion of the Calaveras Road which borders the Mrs. A. Mendoza leasehold in Sections 3 and 10, Township 5 South, Range 1 East, on which there is little or no fencing. This work will be done by Agricultural Division employees with material on hand at Sunol, and entails about one and one-half mile along the westerly line of the road. Both sides of this road should be refenced from the east line of Section 10 above to the end of city property on this road in the San Jose Pueblo lands, or about 12 miles of fencing.

Much other county road fence replacements are needed, but this Calaveras Road fencing should be considered first. Boundary line surveys should also be continued and standard monuments set at all corners. Reference is made to previous annual reports as to the extent of surveys so far made.

Care of Properties:

The control of noxious weeds has been continued as in the past and, on account of such efforts, these large properties have never been criticised by the county authorities of either Alameda, Santa Clara or San Mateo Counties. Our work has been principally with the giant and star thistle, and had such control not been exercised a very serious and unsightly condition would have resulted.

In cooperation with the Agricultural Commissions of Alameda and Santa Clara Counties, which furnished the poisons free during the past few years, assisted by our laborers, ground squirrels are few and far between and the city lands in Santa Clara County are freer of these pests than they have ever been.

ACCOUNTING AND AUDITING

The accounts of the San Francisco Water Department are maintained strictly in accordance with the requirements of the State Railroad Commission and Section 64 of the Charter, which provides for supervision and control by the Controller and the accounts of the Department have been so coordinated with the Controller's system that no encumbrance against the Budget estimates can be incurred without prior certification from the Controller that funds are available.

COMMENTS ON FINANCIAL STATEMENTS
GENERAL BALANCE SHEET
EXHIBIT A

ASSETS

The General Balance Sheet in this report has been set up in a simplified form so as to define more clearly the captions used in previous reports (Exhibit A). The following notes give additional detail to certain items on the Balance Sheet where such additional detail or explanation may seem desirable.

Properties—$50,870,099.55:

This item corresponds to what in previous reports has been designated as "Fixed Capital" and under which caption complete detail is shown on Schedule No. 1.

As a result of survey of properties to determine original cost and accrued depreciation, it has been necessary to apply certain adjustments to property accounts to conform to the appraisal. These adjustments amount to $19,475,709.07 and are made up as follows:

Adjustment of property accounts to conform to original cost	$19,233,366.41
Depreciation for year 1937-38	819,808.24
Reserve previously set up less property abandoned	54,554.98
	$20,107,729.63
Less adjustment due to appraisal	632,020.56
	$19,475,709.07

These adjustments were the result of an appraisal by the Water Department engineers in conjunction with the accounting firm of Lybrand, Ross Bros. and Montgomery. This survey and revaluation is mandatory under Section 128 of the Charter and is the first made since the purchase from Spring Valley Water Company. This appraisal approved by Public Utilities Commission Resolution No. 2862, dated September 12, 1938. (Schedule No. 2 which shows the detail of that portion of the Fixed Capital in Service Construction under the P.W.A. Docket 1510 is shown for historical purposes only, the total being included in Schedule No. 1).

Cash—$3,416,085.66:

This account, less outstanding warrants in amount $65,825.95, is supported by Schedule No. 3 and is derived from sale of bonds and by appropriation of Water Department Surplus.

Inter-Fund Accounts Receivable—$109,938.85:

This amount includes $72,191.15 which was advanced by the Water Department to the Public Utilities Improvement Fund to finance Docket 1132 of 1933 P.W.A. program, and will be returned to the Department when the Public Utilities Improvement Fund is reimbursed by the Federal Government following the filing of Final Grant Requisition. The remaining $37,747.70 is due from other City Departments for cash advanced or work performed. (See Schedule No. 4.)

LIABILITIES

Bonded Debt—$42,004,000.00:

$42,002,000.00 of this amount is Outstanding Bonds (see Schedule No. 5 for complete detail of maturities), and $2,000.00 Matured Bonds not presented for payment.

Accounts Payable—$441,677.25:

This account is made up of the following items:

Contract Payments Due	$133,675.03
Outstanding Warrants	65,825.95
Consumers' Deposits and Advances	61,823.76
General Creditors	96,662.75
Uncompleted Contracts and Commitments	83,689.76

Inter-Fund Accounts—$525,369.04:

Complete detail shown in Schedule No. 4.

Surplus—$11,042,154.38:

For detail analysis and composition of this account, see Exhibits C and D.

INCOME STATEMENT

EXHIBIT B

Gross water sales for the year were $6,882,544.65. Deduction of cash refunds in amount $1,116.74 and allowances and adjustments in amount $18,217.17 leaves net sales of $6,863,210.74.

Operating Expenses show an increase of $135,532.80 over last year. The amount shown for Depreciation Expense last year was $74,385.00. This was increased by $671,381.00 to $745,766.00 as a result of the appraisal and revaluation made during the year.

Depreciation Expense for the year 1937-38 is $819,808.24, accounting for $74,042.24 of the above mentioned increase. Aside from the increase resulting from the readjustment of the Depreciation charges, the balance of the increase—$61,490.56—is accounted for as follows:

	Increase	Decrease
Source of Supply	$25,908.00	
Pumping Expense	.....	$28,284.81
Purification	13,990.62	
Transmission and Distribution	.....	6,975.64
Commercial Division	7,828.35	
Property Taxes	47,073.40	
General and Miscellaneous	4,979.60	
Public Utilities Commission Expense	5,252.49	
Uncollectible Water Bills	.....	25,841.96
Municipal Taxes for Comparison Purposes	17,560.51	
Net Increase	.....	61,490.56
	$122,592.97	$122,592.97

Outside of the increase in Property Taxes, the remaining Operating Expenses are more or less normal.

EXHIBITS C AND D

Show Surplus earned for the past twelve months and composition of Surplus accumulated to date. Following is a statement of the disposition of Surplus arising from operations, together with additions and deductions not strictly confined to operations:

Surplus:	To June 30, 1937	Year 1937-1938	To June 30, 1938
Contributed—			
To General Fund	$6,105,110.00	$1,734,330.10	$7,839,440.10
To Hetch Hetchy Water Supply	1,061,014.05	561,175.21	1,622,189.26
To Hetch Hetchy Power	4,170.00	.....	4,170.00
Advanced by General Fund	*84,298.00*	.....	*84,298.00*
Appropriated—			
For Bond Redemption—			
Spring Valley Bonds	7,000,000.00	1,000,000.00	8,000,000.00
1933 Water Distribution	515,094.33	327,500.00	842,594.33
Additions and Betterments	4,441,916.79	234,700.00	4,676,616.79
For Purchase of Land	22,858.50	.....	22,858.50
For Bond Interest—1933 Water Distr. Bond Fund	1,324.00	.....	1,324.00
For Other Purposes	29,460.38	.....	29,460.38
To Surplus	438,106.30	*611,326.96*	*173,220.66*
	$19,534,756.35	$3,246,378.35	$22,781,134.70
Add:			
Initial Surplus—Excess Earnings — Spring Valley Water Company	$4,152,652.24	.....	$4,152,652.24
Valuation—Municipal Water Works	100,000.00	.....	100,000.00
Grants Earned on Federal Projects	2,244,998.09	1.91	2,245,000.00
Salvage Newark-San Lorenzo Pipe Line	323,723.34	.....	323,723.34
Salvage Corral Hollow Pipe Line	.....	86,566.56	86,566.56
Land Sales	24,288.64	.....	24,288.64
Bond Premium	.....	821,684.38	821,684.38
Reservoir Sites and Aqueducts	20,091.00	.....	20,091.00
Miscellaneous Additions	35,155.05	56,496.17	91,651.22
	$6,900,908.36	$964,749.02	$7,865,657.38
Deduct:			
Contribution to General Fund Net	$6,020,812.00	$1,734,330.10	$7,755,142.10
Deficit County Line Water Wks.	19,189.15	.....	19,189.15
Payment to Spring Valley for purpose of enabling City to take over properties in advance	745,274.31	.....	745,274.31
Lands Contributed to City	143,121.07	.....	143,121.07
Contribution to Hetch Hetchy Water Supply	1,061,014.05	561,175.21	1,622,189.26
Contribution to Hetch Hetchy Power Operative Fund	4,170.00	.....	4,170.00
Miscellaneous Deductions from Surplus	13,914.58	.....	13,914.58
Depreciation Due to Revaluation	.....	8,481,814.33	8,481,814.33
Depreciation—Current Year	.....	819,822.90	819,822.90
	$8,007,495.16	$11,597,142.54	$19,604,637.70
Surplus—June 30	$18,428,169.55	*$7,386,015.17*	$11,042,154.38

Note: Net Income as shown by the Income Statement—$2,426,555.45—has been increased for the purpose of this report by the sum of $819,822.90, which represents current year's depreciation that has not been funded.

Italic figures denote loss and deficiency.

SAN FRANCISCO WATER DEPARTMENT

EXHIBIT A

BALANCE SHEET—JUNE 30, 1938

ASSETS

PROPERTIES:
This is the original cost of construction of Properties purchased from Spring Valley Water Company in 1930 and additions made since by the Water Department. Of the total, $69,916,249.91 is for completed projects and $429,558.71 for work not yet completed $70,345,808.62
Estimated Loss in Service Value, due to wear and tear 19,475,709.07

Remaining Service Value of the Properties now in use $50,870,099.55

CASH:
We have cash deposited with the Treasurer of the City and County of San Francisco totaling $3,416,085.66. Of this, $2,180,217.21 is for retirement of bonds maturing July 1, 1938, and for payment of Bond Interest; $289,271.17 for Additions and Betterments; $314,381.58 is for replacement of worn out plant and equipment; $66,387.20 held in trust to guarantee the payment of water bills and other work done for the Public; $535,828.50 for payment of operating expense, and $30,000.00 for General Manager's Revolving Fund 3,416,085.66

ACCOUNTS RECEIVABLE:
Water Consumers' bills due the Department amount to $510,421.88, the Federal Government $39,500.73, and other creditors the sum of $23,337.10. Against this amount is set up a reserve of $75,000.00 to offset any uncollectible accounts, leaving a net figure of 498,259.71

INTER-FUND ACCOUNTS RECEIVABLE:
This is amount due the Water Department from other City Departments for work performed, but for which the Water Department has not been paid 109,938.85

DEFERRED CHARGES:
Of the total of $463,969.32, $285,000.94 is the amount expended for Materials and Supplies, in stock not yet used; $95,278.62 for cash or credit advanced for Work in Progress; and $83,689.76 for uncompleted Contracts and Other Commitments 463,969.32

$55,358,353.09

LIABILITIES

BONDED DEBT:
This is the remaining balance due on amount borrowed by the Water Department in Bonds, which are being repaid at the rate of $1,563,000.00 per year $42,004,000.00

BOND INTEREST PAYABLE:
Accrued, not due:
$742,500.00 represents six months' interest on one lot of bonds maturing July 1 and January 1 of each year, and $30,006.66 is one month's interest on lot of bonds maturing June 1 and December 1 of each year 772,506.66
Matured Coupons Unpaid:
This is money due Bond Holders for interest coupons not yet presented for payment 120,100.00

ACCOUNTS PAYABLE:
This is money the Water Department owes on uncompleted contracts, for materials and for services contracted, but unpaid. This also includes Advances and Deposits made by Consumers 441,677.25

INTER-FUND ACCOUNTS:
This is the unpaid portion of Annual Contributions to City and County General Fund —$477,852.10 and $47,516.94— due to other City Departments 525,369.04

DEFERRED CREDITS:
Of this total of $452,545.76, $356,745.56 is the amount expended by the Golden Gate International Exposition for the pipe lines and reservoirs to Treasure Island, which entitles it to delivery of water of an equal value; $78,567.05 is the sum advanced to Public Utilities Improvement Fund; $15,000.00 reserve for accident insurance; $1,199.50 is amount deposited by persons who have leased property from the Department which will be taken into Income when due, and $1,033.65 is money advanced by the Public for sprinkler services 452,545.76

SURPLUS:
This is the equity of the people of San Francisco in the San Francisco Water Department's System. It represents the amount that the present value of the properties exceeds the outstanding obligations 11,042,154.38

$55,358,353.09

SAN FRANCISCO WATER DEPARTMENT

EXHIBIT B

INCOME ACCOUNT
FOR TWELVE MONTHS ENDED JUNE 30, 1938 AND 1937

	Twelve Months Ended June 30		Increase or Decrease
Sale of Water:	1938	1937	
San Francisco	$5,986,952.95	$5,982,525.85	$4,427.10
Outside San Francisco	375,290.69	363,134.04	12,156.65
Municipal Departments—Actual	62,144.20	59,992.60	2,151.60
Municipal Departments—Comparison*	438,822.90	421,262.39	17,560.51
	$6,863,210.74	$6,826,914.88	$36,295.86
Operating Expense:			
Source of Water Supply	$179,522.10	$153,614.10	$25,908.00
Pumping	133,203.81	161,488.62	*28,284.81*
Purification	72,782.32	58,791.70	13,990.62
Transmission and Distribution	309,662.98	316,638.62	*6,975.64*
Commercial Division	343,566.83	335,738.48	7,828.35
Administrative and General	514,277.96	456,972.47	57,305.49
Uncollectible Water Bills	6,000.00	31,841.96	*25,841.96*
Provision for Depreciation	819,808.24	745,766.00	74,042.24
Municipal Taxes—Comparison*	438,822.90	421,262.39	17,560.51
	$2,817,647.14	$2,682,114.34	$135,532.80
Profit from Operations	$4,045,563.60	$4,144,800.54	*$99,236.94*
Other Income:			
Rentals, including crop shares	$52,733.37	$50,004.30	$2,729.07
Interest Earned	10,057.55	10,809.50	*751.95*
Sale of Walnuts	24,534.52	27,379.64	*2,845.12*
Miscellaneous	3,628.77	29,161.45	*25,532.68*
	$90,954.21	$117,354.89	*$26,400.68*
Other Expense:			
Bond Interest	$1,678,143.91	$1,643,637.42	$34,506.49
Agricultural Division	16,037.25	15,225.90	811.35
Walnut Orchard Expense	14,603.52	15,452.04	*848.52*
Miscellaneous	1,177.68	2,447.48	*1,269.80*
	$1,709,962.36	$1,676,762.84	$33,199.52
Net Income	$2,426,555.45	$2,585,392.59	*$158,837.14*
Comparison Charges for Federal Income and State Corporation Franchise Taxes Amount to (Estimated)	$392,744.51	$406,543.99	*$13,799.48*

*Water Service to Municipal Departments Offset by Municipal Taxes.

Italic figures denote loss and deficiency.

EXHIBIT C

SURPLUS ACCOUNT

For Twelve Months Ended June 30, 1938

Surplus, June 30, 1937		$9,946,355.22
Add:		
Net Income for Twelve Months Ended June 30, 1938	2,426,555.45	
Salvage Value—Portion of Corral Hollow Pipe Line	86,566.56	
P.W.A. Bond Premium	821,684.38	
Miscellaneous—Net	56,498.08	$13,337,659.69
Deduct:		
Contribution to General Fund 1937-1938	$1,734,330.10	
Contribution to Hetch Hetchy Water Supply 1937-1938	561,175.21	$2,295,505.31
Surplus, June 30, 1938		$11,042,154.38

EXHIBIT D

COMPOSITION OF SURPLUS

June 30, 1938

ADDITIONS

Initial Surplus, March 3, 1930:		
Amortization Contribution (Spring Valley)	$4,152,652.24	
Valuation of Municipal Water Works	100,000.00	
Net Earnings, March 3, 1930 to June 30, 1938	12,743,810.13	
Grants Earned on Federal Public Works Projects	2,245,000.00	
Salvage Value of Newark-San Lorenzo Pipe Line Transferred from Hetch Hetchy Water Supply	323,723.34	
Salvage Value Portion of Corral Hollow Pipe Line	86,566.56	
Federal Government Expenditures for labor used in Building a Roof Over Crystal Springs Aqueduct	20,091.00	
Contribution from General Fund a/c P.W.A. Interest and Redemption	84,298.00	
Bond Premium	821,684.38	
Miscellaneous Additions (Net)	73,249.16	$20,651,074.81

DEDUCTIONS

Contribution to General Fund	$7,839,440.10	
Contribution to Hetch Hetchy Water Supply	1,622,189.26	
Contribution to Hetch Hetchy Power Division	4,170.00	
Lands Contributed:		
To City and County of San Francisco for Streets and Boulevards	137,811.07	
To Joint Highway Commission for Widening of Junipero Serra Blvd. in San Mateo County	5,310.00	9,608,920.43
Surplus, June 30, 1938		$11,042,154.38

EXHIBIT E

STATEMENT OF OPERATING EXPENSES

For the Fiscal Years Ended June 30, 1938 and June 30, 1937

	Fiscal Year Ended June 30 1938	1937
Source of Water Supply Expense:		
Superintendence	$23,919.50	$22,314.72
Operating Labor	28,957.54	37,285.65
Operating Supplies and Expense	13,580.64	16,718,84
Repairs—Buildings and Fixtures	93,839.06	60,245.14
Repairs—Surface Facilities	18,893.82	16,864.79
Repairs—Ground Facilities	.....	60.81
Repairs—Miscellaneous Equipment	331.54	124.15
	$179,522.10	$153,614.10
Pumping Expense:		
Labor Pumping	$40,039.01	$38,507.09
Labor Miscellaneous	3,606.43	4,418.17
Fuel for Steam	10,689.39	11,005.18
Power Purchased	64,317.69	90,239.40
Lubricants	49.92	57.93
Miscellaneous Supplies and Expense	2,158.51	2,598.62
Repairs—Primary Pumping Equipment	3,973.81	6,784.52
Repairs—Boilers and Equipment	1,308.81	148.57
Repairs—Miscellaneous Equipment	1,085.60	1,046.90
Other Repairs and Gardening	5,974.64	6,682.24
	$133,203.81	$161,488.62
Purification Expense:		
Superintendence	$712.46	$3,693.91
Labor	27,700.91	18,369.78
Supplies and Expense	40,838.74	31,410.68
Repairs—Plants and Structures	3,285.69	5,120.96
Repairs and Maintenance—Roads and Trails	244.52	196.37
	$72,782.32	$58,791.70
Transmission and Distribution Expense:		
Superintendence	$33,037.83	$30,908.88
Patrolling Storage Facilities	12,453.92	11,927.23
Meters and Fittings Department	63,241.64	83,791.48
Street Department	15,371.52	15,488.13
Consumers' Premises Expense	12,964.92	12,799.35
Miscellaneous Supplies and Expense	7,475.05	7,373.60
Repairs—Transmission Mains and Canals	18,567.93	25,037.72
Repairs—Reservoirs, Tanks and Standpipes	4,602.53	2,737.93
Repairs—Distribution Mains and Canals	55,428.02	56,239.04
Repairs—Service	71,369.12	63,026.12
Repairs—Distribution Buildings	14,121.43	6,278.61
Repairs—Miscellaneous Distribution Equipment	1,029.07	1,030.53
	$309,662.98	$316,638.62
Commercial Expense		
Collections	$113,001.22	$110,112.43
Reading Meters	33,476.94	33,621.49
Bookkeeping Department	99,242.59	99,556.36
General	33,097.28	31,652.69
Inspection and Service	50,465.42	46,568.49
Shipping	14,283.38	14,227.02
	$343,566.83	$335,738.48

Administrative and General Expenses:	Fiscal Year Ended June 30 1938	1937
Salaries of General Officers	$18,399.84	$18,399.99
Salaries of General Office Clerks	40,628.25	36,512.70
Miscellaneous Supplies and Expense	5,387.76	6,082.57
Injuries and Damages	1,129.46	3,061.80
Relief Department Expense	39,860.19	38,843.82
Mason Street Building Expense	21,568.76	22,392.70
Telephone Service	15,294.47	15,469.80
Guest Cottages and Rest Room	2,245.17	2,010.14
General Engineering	33,689.62	34,661.99
Hydrography	2,104.77	2,669.32
Miscellaneous	4,270.30	5,064.34
Compensation Insurance	4,683.83	4,485.16
Other Insurance	5,282.72	5,659.01
Repairs—Mason Street Building	11,011.56	6,143.47
Repairs—General Structures	.....	3,857.97
Repairs—Telephone System	8,774.90	5,355.97
Professional Services—		
Advisory and Consulting Expense	7,293.75	5,975.00
Public Utilities Commission Expense	52,522.00	47,269.51
Property Taxes	240,130.61	193,057.21
	$514,277.96	$456,972.47

SCHEDULE No. 1

FIXED CAPITAL IN SERVICE

1001	Properties Purchased March 3, 1930	$42,231,255.47	
1002	Municipal Water Works	100,000.00	
1010	Intangible Capital	235,018.49	
1015	Landed Capital	49,787.30	
1020	Buildings, Structures and Grounds	97,025.21	
1025	Source of Water Supply	1,212,073.12	
1030	Pumping Station Equipment	68,834.39	
1035	Purification System	133,218.15	
1040	Transmission and Distribution	2,555,845.35	
1045	General Equipment	113,238.72	
1046	Automobiles	102,337.15	
1060	Exposition Water System	367,515.17	
1405	P.W.A. Projects—Docket 1132	322,223.33	
1406	P.W.A. Projects—Docket 1510	12,163,735.97	
	Adjustment of Property Values Based Upon Revaluation Report	10,164,142.09	$69,916,249.91

FIXED CAPITAL UNDER CONSTRUCTION

1400	Extension Reserve Fund	$44,989.89	
1401	Palo Alto Pipe Line	321,952.89	
1405	P.W.A. Projects—Docket 1132	24,510.41	
1406	Work in Progress	38,105.52	429,558.71
	Total Capital Assets		$70,345,808.62
	Less Reserve for Depreciation		19,475,709.07
	Net Capital Assets		$50,870,099.55

SCHEDULE No. 2

FIXED CAPITAL IN SERVICE
P.W.A. PROJECTS—June 30, 1938

Docket	Account	DESCRIPTION	Total	Contract	Materials	Inspections and Supervisions	Force Acct. Main Connections	Force Acct. Transfer Services	Indirect Cost Total
1500	100	General Expenditures—Interest During Construction	$657,132.74	.....	.....	.....	.....	.....	$657,132.74
1501	105	General Expenditures—Undistributed Construction Costs	72,477.00	.....	.....	.....	.....	.....	72,477.00
1502	110	General Expenditures—Equipment Purchased—Undistributed	10,162.67	.....	.....	.....	.....	.....	10,162.67
1503	115	General Expenditures—Miscellaneous	810.68	.....	.....	.....	.....	.....	810.68
			$740,583.09	.....	.....	.....	.....	.....	$740,583.09
1510-1	140	Bay Crossing Pipe Line No. 2—Undistributed Construction Costs	$92,518.51	.....	.....	.....	.....	.....	92,518.51
1510-1-A-1	145	Bay Crossing Pipe Line No. 2—66″ Steel Pipe	1,784,377.65	$1,703,974.46	$37,281.67	$42,722.66	.....	.....	398.86
1510-1-A-2	150	Bay Crossing Pipe Line No. 2—62″ Reinforced Concrete Pipe	669,738.79	640,461.17	17,696.30	11,572.99	.....	.....	8.33
1510-1-B	155	Bay Crossing Pipe Line No. 2—Trestles for Pipe	191,124.46	180,813.18	.....	10,286.66	.....	.....	24.62
1510-1-C	160	Bay Crossing Pipe Line No. 2—Submarine Pipe and Caissons	800,821.11	736,913.30	27,100.87	35,086.91	.....	.....	1,720.03
1510-1-D	165	Bay Crossing Pipe Line No. 2—Pump Station at Irvington	3,356.01	.....	.....	.....	.....	.....	3,356.01
1510-1-E	170	Bay Crossing Pipe Line No. 2—Housing Over Pipe on Trestle	39,900.79	34,824.97	.....	3,582.88	.....	.....	1,492.94
1510-1-F	175	Bay Crossing Pipe Line No. 2—Railroad Culvert Crossings	34,743.59	34,743.59	.....	.....	.....	.....	.....
			$3,616,580.91	$3,331,730.67	$82,078.84	$103,252.10	.....	.....	$99,519.30
1510-2	200	Sunset Reservoir and Pipes—Undistributed Section Costs	$207,898.04	.....	.....	.....	.....	.....	207,898.04
1510-2-A	205	Sunset Reservoir and Pipes—54″ Steel Pipe Supply Line	160,761.08	$154,185.40	$2,342.09	$2,804.76	$1,390.86	.....	37.97
1510-2-B	210	Sunset Reservoir and Pipes—Excavation and Embankments	217,769.63	195,713.51	.....	20,527.15	.....	.....	1,528.97
1510-2-C	215	Sunset Reservoir and Pipes—Concrete Construction	816,844.28	780,234.95	5,451.89	18,057.96	.....	.....	13,099.48
1510-2-D	220	Sunset Reservoir and Pipes—60″ Pipe Discharge Line	230,599.18	218,654.63	4,561.54	4,195.30	1,852.82	.....	1,334.89
			$1,633,872.21	$1,348,788.49	$12,355.52	$45,585.17	$3,243.68	.....	$223,899.35
1510-3	250	Extension to City Pipe System—Undistributed Section Costs	$29,977.23	.....	.....	.....	.....	.....	$29,977.23
1510-3-A-1	255	Extension to City Pipe System—University Mound 44″ & 36″ Steel Pipe.	61,061.27	$54,801.55	$1,725.92	$1,314.51	$3,143.29	.....	76.00
1510-3-A-2	260	Extension to City Pipe System—University Mound 36″ & 30″ Steel Pipe.	94,711.29	87,575.02	2,790.16	2,287.34	1,992.30	.....	66.47
1510-3-A-2-B	265	Extension to City Pipe System—University Mound 36″ & 30″ Steel Pipe.	155,262.84	142,498.86	4,493.49	2,488.13	5,651.50	.....	130.86
1510-3-B-1	270	Extension to City Pipe System—Extension Grid System 6″ & 8″ Pipe....	78,244.22	28,524.91	26,942.81	659.50	6,229.82	$15,384.00	503.18
1510-3-B-2	275	Extension to City Pipe System—Extension Grid System 6″ & 8″ Pipe....	65,411.28	27,909.02	25,061.50	582.46	5,109.99	6,704.57	43.74
1510-3-B-3	280	Extension to City Pipe System—Extension Grid System 6″ & 8″ Pipe....	67,003.90	30,837.18	18,523.97	1,072.55	6,021.48	10,436.35	112.37
1510-3-B-4	285	Extension to City Pipe System—Extension Grid System 6″ & 8″ Pipe....	74,242.10	33,544.11	26,956.05	625.95	5,464.43	7,610.22	41.34
1510-3-B-5	290	Extension to City Pipe System—Extension Grid System 6″ & 8″ Pipe....	52,330.15	23,130.09	18,827.45	606.76	3,247.69	6,518.16	.....
1510-3-B-6	295	Extension to City Pipe System—Extension Grid System 6″ & 8″ Pipe....	62,757.70	25,160.48	19,062.88	645.31	4,239.99	13,641.72	7.32
1510-3-B-7	300	Extension to City Pipe System—Extension Grid System 6″ & 8″ Pipe....	76,045.33	30,348.29	25,602.57	898.36	4,630.96	14,400.88	164.27

Docket	Account	DESCRIPTION	Total	Contract	Materials	Inspections and Supervisions	Force Acct. Main Connections	Force Acct. Transfer Services	Indirect Cost Total
1510-3-B-8	305	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	63,767.18	25,817.14	20,668.63	521.29	3,459.97	13,057.73	242.42
1510-3-B-9	310	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	49,817.50	19,505.69	18,108.05	1,032.21	3,993.06	6,736.04	442.45
1510-3-B-10	315	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	48,714.96	21,759.51	13,382.19	1,736.58	4,418.97	7,118.80	298.91
1510-3-B-11	320	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	55,442.41	19,444.53	18,283.20	1,321.63	3,908.20	12,205.74	279.11
1510-3-B-12	325	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	68,258.76	30,839.61	23,269.47	1,717.24	4,125.24	8,033.70	273.50
1510-3-B-13	330	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	50,826.72	18,007.88	17,649.81	1,136.24	4,088.89	9,830.81	113.09
1510-3-B-14	335	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	44,996.66	16,882.31	16,425.30	791.59	2,974.54	7,814.85	108.07
1510-3-B-15	340	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	63,258.83	25,637.69	20,533.60	915.06	5,395.70	10,672.05	104.73
1510-3-B-16	345	Extension to City Pipe System—Extension Grid System 6" & 8" Pipe....	50,686.96	19,496.80	18,814.42	750.84	3,796.00	7,705.46	123.44
1510-3-C-1	350	Extension to City Pipe System—Secondary Mains C. I. Pipe 16" & 12"...	124,103.23	43,448.60	74,936.18	1,035.15	4,616.70	.....	66.60
1510-3-C-2	355	Extension to City Pipe System—Secondary Mains C. I. Pipe 16" & 12"...	131,377.71	46,976.32	79,608.18	1,223.10	3,379.12	.....	190.99
1510-3-C-3	360	Extension to City Pipe System—Secondary Mains C. I. Pipe 16" & 12"...	97,580.68	37,011.13	51,679.15	1,729.24	6,859.95	.....	301.21
1510-3-C-3-A	360A	Extension to City Pipe System—Secondary Mains C. I. Pipe 16" & 12"...	2,248.69	891.20	1,101.21	17.25	121.40	.....	117.63
1510-3-C-4	365	Extension to City Pipe System—Secondary Mains C. I. Pipe 16" & 12"...	101,478.12	51,164.34	41,891.16	2,002.84	6,151.51	.....	268.27
1510-3-C-5	370	Extension to City Pipe System—Secondary Mains C. I. Pipe 16" & 12"...	142,302.24	135,005.08	1,248.33	3,090.26	2,697.46	.....	261.11
1510-3-C-6	375	Extension to City Pipe System—Secondary Mains 20" Steel Pipe.....	138,259.93	128,243.55	3,235.56	4,048.05	2,506.06	.....	226.71
1510-3-D	380	Extension to City Pipe System—College Hill 30" & 20" Steel Pipe	140,183.67	120,295.51	10,478.91	4,213.07	3,991.20	.....	1,204.98
1510-3-E	385	Extension to City Pipe System—Crosstown 44" & 36" Steel Pipe	213,744.30	196,620.37	7,092.68	6,008.74	3,154.37	.....	868.14
1510-3-F	390	Extension to City Pipe System—Central Pumps Reservoir	182,841.11	165,210.06	4,028.26	9,427.29	542.00	.....	3,633.50
1510-3-F-A	390A	Extension to City Pipe System—Central Pumps Reservoir	3,295.08	3,130.39	24.88	125.65	.....	.....	14.16
			$2,590,232.05	$1,609,717.22	$612,445.97	$54,024.19	$115,911.79	$157,871.08	$40,261.80
1510-4	500	University Mound Reservoir Addition—Undistributed Section Costs	$114,355.81	.....	.....	.....	.....	.....	$114,355.81
1510-4-A	505	University Mound Reservoir Addition—Excavation and Embankment	106,840.85	$99,714.23	$57.65	$6,820.00	.....	.....	248.97
1510-4-C	515	University Mound Reservoir Addition—Concrete Construction	716,384.98	680,020.87	8,938.79	21,989.29	.....	.....	5,436.03
			$937,581.64	$779,735.10	$8,996.44	$28,809.29	.....	.....	$120,040.81
1510-5	550	Crystal Springs-University Mound Pipe Line—Undistributed Constr. Costs	$155,172.64	.....	.....	.....	.....	.....	155,172.64
1510-5-A	555	Crystal Springs-University Mound Pipe Line—Crystal Spgs. Pipe Line Tun.	223,251.79	$210,831.44	$180.15	$11,846.51	.....	.....	393.69
1510-5-B	560	Crystal Springs-University Mound Pipe Line—Millbrae to University Md.	1,349,830.46	1,274,315.31	7,497.00	54,424.76	.....	.....	13,593.39
1510-5-C	565	Crystal Springs-University Mound Pipe Line—Crystal Springs to Millbrae	739,210.56	658,615.26	19,413.12	41,860.10	.....	.....	19,322.08
1510-5-D	570	Crystal Springs-University Mound Pipe Line—Crystal Spgs. Tunnel & Out.	64,704.92	61,357.20	.....	3,088.57	.....	.....	259.15
1510-5-E	575	Crystal Springs-University Mound Pipe Line—Railroad Culvert Crossings.	6,010.37	6,010.37	.....	.....	.....	.....	.....
			$2,538,180.74	$2,211,129.58	$27,090.27	$111,219.94	.....	.....	$188,740.95
1510-6		Material on Hand	$67,595.72	.....	.....	.....	.....	.....	$67,595.72
		Grand Total	$12,124,626.36	$9,281,101.06	$742,967.04	$342,890.69	$119,155.47	$157,871.08	$1,480,641.02

NOTE: This statement is complete insofar as Construction Costs are concerned. Minor adjustments still to be made in Indirect Costs.

SCHEDULE No. 3

SAN FRANCISCO WATER DEPARTMENT
CASH AND OUTSTANDING WARRANTS
JUNE 30, 1938

	Treasurer's Balance	Outstanding Warrants
Water Revenue Fund	$535,828.50	$58,176.95
Special Deposit Trust Fund	66,387.20	3,529.79
Land Purchase Fund	43,109.91	
Extension Reserve Fund	246,161.26	995.98
Depreciation Fund	314,381.58	3,000.00
Bond Redemption (1928)	1,002,000.00	
Bond Interest (1928)	759,420.00	
Bond Interest (1933)	103,180.00	
Bond Fund (1933)	315,617.21	123.23
	$3,386,085.66	$65,825.95

SCHEDULE No. 4

SAN FRANCISCO WATER DEPARTMENT
SUMMARY OF INTERFUND ACCOUNTS
JUNE 30, 1938

ACCOUNTS RECEIVABLE

Public Service Enterprises:	
Hetch Hetchy Water Supply	$11,869.37
San Francisco Airport	113.63
Public Utilities Improvement Fund Owes Depreciation Fund	72,191.15
Municipal Railway	130.90
	$84,305.05
General City and County:	
Public Utilities Commission—Bureau of Engineering	$25,109.49
General Fund—Department of Public Works	273.75
General Fund—Fire Department	250.56
	$25,633.80

ACCOUNTS PAYABLE

Public Service Enterprises:	
Municipal Railway	$200.10
General City and County:	
General Fund (from Bond Fund)	$39,450.74
Retirement System	7,407.85
General Fund—Contributions	477,852.10
Department of Public Works	213.92
Public Utilities Commission—General Office	40.77
General Fund—Controller (Bond Fund)	7.36
Real Estate Department (Bond Fund)	196.20
	$525,168.94

SCHEDULE No. 5

SAN FRANCISCO WATER DEPARTMENT
SCHEDULE OF BONDED INDEBTEDNESS
JUNE 30, 1938

Spring Valley 4½% Bonds

Maturity	Amount
July 1, 1938	$1,000,000.00
July 1, 1939	1,000,000.00
July 1, 1940	1,000,000.00
July 1, 1941	1,000,000.00
July 1, 1942	1,000,000.00
July 1, 1943	1,000,000.00
July 1, 1944	1,000,000.00
July 1, 1945	1,000,000.00
July 1, 1946	1,000,000.00
July 1, 1947	1,000,000.00
July 1, 1948	1,000,000.00
July 1, 1949	1,000,000.00
July 1, 1950	1,000,000.00
July 1, 1951	1,000,000.00
July 1, 1952	1,000,000.00
July 1, 1953	1,000,000.00
July 1, 1954	1,000,000.00
July 1, 1955	1,000,000.00
July 1, 1956	1,000,000.00
July 1, 1957	1,000,000.00
July 1, 1958	1,000,000.00
July 1, 1959	1,000,000.00
July 1, 1960	1,000,000.00
July 1, 1961	1,000,000.00
July 1, 1962	1,000,000.00
July 1, 1963	1,000,000.00
July 1, 1964	1,000,000.00
July 1, 1965	1,000,000.00
July 1, 1966	1,000,000.00
July 1, 1967	1,000,000.00
July 1, 1968	1,000,000.00
July 1, 1969	1,000,000.00
July 1, 1970	1,000,000.00
	$33,000,000.00

1933 Water Distribution 4% Bonds

Maturity	Amount
December 1, 1938	$563,000.00
December 1, 1939	563,000.00
December 1, 1940	563,000.00
December 1, 1941	563,000.00
December 1, 1942	563,000.00
December 1, 1943	563,000.00
December 1, 1944	563,000.00
December 1, 1945	563,000.00
December 1, 1946	563,000.00
December 1, 1947	563,000.00
December 1, 1948	563,000.00
December 1, 1949	563,000.00
December 1, 1950	563,000.00
December 1, 1951	563,000.00
December 1, 1952	563,000.00
December 1, 1953	557,000.00
	$9,002,000.00

Total Bonds Outstanding June 30, 1938

Spring Valley Bonds	$33,000,000.00
1933 Water Distribution Bonds	9,002,000.00
Total	$42,002,000.00

SCHEDULE No. 6

OPERATING EXPENSES

RESERVOIRS AND SOURCES	1934–35	1935–36	1936–37	1937–38
Inside of San Francisco				
Lake Merced	$4,335.91	$4,822.96	$5,608.04	$5,100.63
Sunset Wells	18.18	194.29	60.81	.....
Sunset Pump Supply Line	1,346.48	150.47	2,700.29	.....
Central Pump Supply Line	.....	329.20	19.55	.....
City Pump Supply Line	6.89	118.29	185.99	.....
	$5,707.46	$5,615.21	$8,574.68	$5,100.63
Outside of San Francisco				
Surface Source				
San Andres Reservoir	$10,455.47	$8,461.74	$9,751.01	$17,946.48
Crystal Springs Reservoir	31,122.91	27,127.23	28,790.17	37,814.45
Pilarcitos Reservoir	11,836.96	24,332.69	14,433.70	15,294.02
Calaveras Reservoir	8,531.28	12,705.72	15,185.69	15,367.70
Coast Range Tunnels	32,106.78	1,169.53	.....	.....
Niles Reservoir	.....	.....	1.70	.....
	$94,053.40	$73,796.91	$68,162.27	$86,422.65
Ground Source				
Sunol Filter Beds	$8,008.34	$9,610.52	$8,646.51	$8,291.48
Pleasanton Wells	75.65	240.19	27.96	79.80
	$8,083.99	$9,850.71	$8,674.47	$8,371.28
Supply Lines				
Bay Division Pipe Line No. 2	.....	.....	.....	$9.00
Bay Division Pipe Line	$6,394.78	$8,278.78	$11,694.77	13,997.52
Stone Dam Aqueduct	6,923.03	9,634.27	5,692.41	7,111.09
Pilarcitos Aqueduct	925.58	673.86	946.00	379.20
San Andres Aqueduct	.....	.....	57.16	.....
Crystal Springs Pump Supply Line	52.42	539.70	40.91	123.14
Belmont Pump Supply Line	3.02	16.29	1.84	.....
Niles-Irvington Pipe Line	696.02	1,022.00	457.21	668.70
Niles Supply Lines	12.01	28.71	.....	.....
Pleasanton Pump Supply	859.11	33.90	5.03	.....
Sunol Supply Line	181.55	22.09	.....	.....
Upper Alameda Tunnel	731.72	770.81	66.15	415.7
Upper Alameda Creek Diversion Dam	1,084.02	1,003.52	1,213.16	2,385.0
Calaveras Pipe Line	695.04	703.52	89.65	283.5
Niles Transmission Line	31.74	.....	.....	.....
Newark-San Lorenzo Pipe Line	.....	.....	52.32	.....
	$18,590.04	$22,727.45	$20,316.61	$25,372.9
Alameda System	11,535.68	12,278.59	10,820.39	15,820.0
Peninsula System	32,871.33	40,846.05	37,065.68	38,434.5
	$44,407.01	$53,124.64	$47,886.07	$54,254.6
Total Source of Supply	$170,841.90	$165,114.92	$153,614.10	$179,522.1

SCHEDULE No. 7

OPERATING EXPENSES

TRANSMISSION AND DISTRIBUTION

nside of San Francisco	1934–35	1935–36	1936–37	1937–38
San Andres Transmission Line No. 1	$170.84	$1,688.53	$946.16	$825.34
San Andres Transmission Line No. 2	*124.72*	56.15	.....	.....
San Andres Transmission Line—Merced Branch	1,151.94	555.99	1,249.31	32.17
Crystal Springs Transmission Line	745.62	.....	19.38	.....
Lake Honda Transmission Line	42.06	344.02	154.33	125.58
Sunset Reservoir Transmission Line	.....	171.74	.....	.....
City Reservoirs	14,235.46	11,554.93	12,923.78	22,937.97
Meter Expense	44,031.65	65,775.43	77,231.63	58,703.54
Street Department Expense	13,529.93	13,234.34	15,488.13	15,371.52
Main Repairs	37,665.99	40,617.19	56,239.04	55,428.02
Service Connection Repairs	50,203.95	60,334.37	63,003.71	71,325.33
Repairs to Buildings and Equipment	1,769.00	2,008.09	3,159.75	3,512.03
Miscellaneous Supplies and Expense	5,496.13	6,003.23	6,043.09	5,954.67
Consumers' Premises Expense*	.....	.....	.....	.....
Superintendence	26,089.43	31,322.11	30,908.88	33,037.83
Total in San Francisco	$195,007.28	$233,666.12	$267,367.19	$267,254.00
Outside of San Francisco				
Alameda Supply Line	$4,380.28	$3,297.21	$923.44	$559.57
Alameda Transmission Line	5,403.57	4,470.59	5,939.04	4,019.87
Stone Dam Aqueduct	.....	.....	5.47	.....
Crystal Springs Pump Aqueduct	7,119.61	6,265.08	6,300.69	5,673.53
New Crystal Springs Transmission Line	.....	.....	.....	2,651.69
Crystal Springs Transmission Line	1,984.45	4,133.28	8,177.84	4,823.27
San Andres Line No. 1	1,475.05	1,423.17	1,769.84	2,186.01
San Andres Line No. 2	3,452.59	2,293.32	3,142.75	1,985.10
San Andres Line—Merced Branch	1,905.44	863.30	1,082.11	547.24
Niles Reservoir	3,180.60	2,872.53	2,561.37	2,415.89
Pleasanton Transmission Line	9.09	23.26	9.68	.....
Meter Expense	3,617.66	4,415.89	8,331.97	4,581.89
Total Outside of San Francisco	$32,528.34	$30,057.63	$38,244.20	$29,444.06
Transferred from Miscellaneous Income	*2,915.90*	.....	.....	.....
Total Transmission and Distribution Expense	$224,619.72	$263,723.75	$305,611.39	$296,698.06
*Consumers' Premises Transferred to Commercial Expense	$17,370.49	$13,037.11	$11,027.23	$12,964.92

Italic figures denote loss and deficiency.

SCHEDULE No. 8

OPERATING EXPENSES

PUMP STATIONS

Inside of San Francisco

Steam Plants	1934–35	1935–36	1936–37	1937–38
Central	$40,531.46	$40,859.57	$42,029.94	$41,255.56
City	1,804.27	562.73	2,359.99	423.47
Black Point	338.94	264.38	210.22	70.64
Clarendon Heights	126.75	219.47	447.98	297.96
Ocean View	3.52	9.66	.....	.....
	$42,804.94	$41,915.81	$45,048.13	$42,047.63
Electric Pumps				
Bay Bridge Pump—San Francisco Exposition, 1939	.....	.....	.....	$895.24
Precita Valley	$67.14	$37.61	$424.81	158.41
Forest Hill	2,496.46	4,369.92	4,617.88	3,799.56
Potrero Heights	158.13	148.87	204.92	134.48
Newcomb Avenue	496.67	526.59	561.55	719.59
Hillside	425.27	353.40	395.54	301.98
Fairview	394.91	544.16	164.94	84.78
Lincoln Park	131.71	318.47	388.81	96.21
Crocker Amazon	.....	16.07	.....	.....
Daly Hill	9.68	1.20	.....	.....
Twin Peaks	207.04	329.00	310.23	541.33
Lake Honda Booster	3,746.35	2,712.83	2,318.91	4.67
University Pump	632.92	569.19	26.74	.....
Leland Avenue	7.75	297.27	.17	57.16
Sunset Booster	33,652.67	8,682.50	2,204.91	2,000.35
Sunset Wells	.....	.....	3.03	.....
Sunset Reservoir	.....	.....	.....	25.39
Sunset Source	19,884.51	9,688.31	1,840.33	1,363.73
Olmstead	445.40	384.57	379.84	482.49
Bernal Heights	219.69	218.55	124.52	386.56
St. Germain	.....	44.40	280.92	110.13
	$62,976.30	$29,242.91	$14,248.05	$11,162.06
Total Inside San Francisco	$105,781.24	$71,158.72	$59,296.18	$53,209.69

Outside of San Francisco

Belmont Pump	$58,860.49	$60,828.30	$3,300.23	$3,087.03
Millbrae Pump	422.14	701.21	352.33	423.07
Crystal Springs Pump	80,910.99	71,375.70	82,661.36	60,981.73
Bay Division Pump	21,423.10	6,897.50	6,188.15	8,313.50
Pleasanton Pumps	22,381.43	9,008.02	5,753.78	3,860.71
Pleasanton Township Water District	4,336.76	4,005.49	3,568.62	3,050.34
San Lorenzo Pumps	172.67	479.96	236.25	277.74
Calaveras Aerator	.....	.....	131.72	.....
	$188,507.58	$153,296.18	$102,192.44	$79,994.12
Transfer from Miscellaneous Income by Auditors	*$3,503.86*	.....	.....	.....
Total Pumping Expenses	$290,784.96	$224,454.90	$161,488.62	$133,203.81

Italic figures denote loss and deficiency.

SCHEDULE No. 9

OPERATING EXPENSES

PURIFICATION EXPENSE

Inside of San Francisco	1934–35	1935–36	1936–37	1937–38
Lake Merced	.....	.....	$104.38	.....
Lombard Street	$57.51	.....	.....	.....
Clarendon Heights Tank	145.58	.....	.....	.....
Sunset	280.54	$166.49	35.51	.....
College Hill	647.15	677.73	1,017.83	$1,264.85
University Mound	769.86	768.84	1,199.40	2,650.90
Lake Honda	6,888.24	6,494.90	6,730.35	6,934.39
Division General	430.07	1,998.76	8,742.23	1,147.24
	$9,218.95	$10,106.72	$17,829.70	$11,997.38
Outside of San Francisco				
Peninsula Laboratory	.....	.....	$3,653.00	$21,256.39
Calaveras Reservoir	$2,837.98	$3,002.69	856.01	3,409.58
Calaveras Aerator Plant	574.95	2,785.45	1,916.96	1,346.80
Calaveras Chlorinator	.....	.....	5,741.51	4,962.18
Calaveras P/L Chlorine Plant (Temp.)	118.69	.....	.....	.....
Tesla Portal	.....	.....	.....	4,089.04
Sunol	4,390.04	3,507.00	1,514.69	1,861.15
Irvington Portal	3,721.73	11,233.29	6,828.28	2,194.73
Coast Range Division	357.85	300.73	.....	.....
Hetch Hetchy Junction Purification	.....	.....	3,972.23	4,880.56
Foothill Division	140.12	.....	.....	.....
Portable Chlorinator Unit	.....	.....	4.95	.....
Bay Division	49.85	6.00	.....	.....
Alameda Transmission Line	151.65	25.00	.....	.....
Belmont Purification System	803.75	1,197.04	314.97	414.88
Crystal Springs	4,663.76	6,460.05	5,245.82	9,989.94
Crystal Springs Pipe Line	5.98	.75	.....	.....
Millbrae	23.88	51.31	.....	.....
Pilarcitos Reservoir	27.94	83.19	176.29	191.79
San Andres Reservoir	1,925.83	2,685.11	1,724.81	1,340.71
San Andres System No. 1	1,636.04	1,633.96	1,776.60	1,044.47
San Andres System No. 2	2,206.11	2,168.10	2,691.35	3,489.17
San Andres Transmission Line No. 1	.....	20.62	.....	.....
San Mateo Screen Tank	36.75	18.11	271.16	179.38
Division General—Peninsula	2,458.92	3,116.80	3,757.37	40.69
Division General—Alameda	.....	791.58	516.00	93.48
	$26,131.82	$39,086.78	$40,962.00	$60,784.94
Total Purification Expense	$35,350.77	$49,193.50	$58,791.70	$72,782.32

SCHEDULE No. 10
OPERATING EXPENSES

Commercial Expense:	1934–35	1935–36	1936–37	1937–38
Collections	$102,551.72	$107,293.41	$110,112.43	$113,001.22
Reading Meters	32,909.68	35,304.14	33,621.49	33,476.94
Bookkeeping Department	92,647.66	94,811.44	99,556.36	99,242.59
General and Miscellaneous	28,762.21	30,142.54	31,652.69	33,097.28
Inspection and Service	41,771.83	43,363.53	46,568.49	50,465.42
Shipping	13,664.34	14,182.12	14,227.02	14,283.38
Consumers' Premises*	17,370.49	13,037.11	11,027.23	12,964.92
	$329,677.93	$338,134.29	$346,765.71	$356,531.75
General and Miscellaneous:				
Salary of General Officers	$16,468.03	$18,400.04	$18,399.99	$18,399.84
Salary of General Office Clerks	32,148.76	37,782.14	36,512.70	40,628.25
Miscellaneous Supplies and Expenses	5,982.46	5,827.28	10,426.91	8,908.86
Public Utilities Commission Expense	37,977.00	45,468.10	47,269.51	52,522.00
General Engineering	24,248.41	29,072.55	34,661.99	33,689.62
Hydrography	2,916.84	4,596.39	2,669.32	2,104.77
Telephone Operation	13,350.77	15,106.10	15,469.80	15,294.47
Repairs to Telephone System	4,967.99	5,733.74	5,355.97	8,774.90
Mason Street Building Operation	20,371.00	21,410.13	22,392.70	21,568.76
Rest Room and Guest Cottages	1,309.23	1,286.44	2,010.14	2,245.17
Mason Street Building Repairs	266.52	2,209.20	6,143.47	11,011.56
Advisory and Consulting	1,871.02	6,439.25	5,975.00	7,293.75
Repairs to General Structures	.....	430.04	3,857.97	.....
	$161,878.03	$193,761.40	$211,145.47	$222,441.95
Other Operating Expenses:				
Insurance Compensation	$12,839.46	$4,315.70	$4,485.16	$4,683.83
Insurance, Other	6,505.14	6,456.16	5,659.01	5,282.72
Injuries and Damages	5,617.11	532.58	3,061.80	1,129.46
Pensions	42,725.24	42,620.31	38,843.82	39,860.19
Property Taxes	201,278.31	199,648.01	193,057.21	240,130.61
Miscellaneous	1,130.80	3,564.90	720.00	749.20
	$270,096.06	$257,137.66	$245,827.00	$291,836.01
	$431,974.09	$450.899.06	$456,972.47	$514,277.96

*Transferred from Transmission and Distribution Expense.

SCHEDULE No. 11

OPERATING EXPENSES 1937-38
City Distribution Division

Pumping Station Account

	Labor	Transportation	Material	Fuel or Power	Machine Shop	Miscellaneous	Total
Steam Pumps:							
Black Point	$61.25	$1.95	$7.44	.....	....	....	$70.64
Central	28,619.35	43.47	517.63	$10,593.36	$398.00	$14.00 *1,069.75	41,255.56
City	423.47	....	....	.....	....	....	423.47
Clarendon Heights	264.45	11.40	7.91	.....	....	*14.20	297.96
	$29,368.52	$56.82	$532.98	$10,593.36	$398.00	$1,097.95	$42,047.63
Electric Pumps:							
Fairview Pump	$29.42	$2.55	$8.58	$28.88	....	*$15.35	$84.78
Forest Hill Pump	675.91	65.85	95.54	2,842.36	$101.05	2.50 *16.35	3,799.56
Hillside Pump	25.38	2.40	....	274.20	....	....	301.98
Leland Avenue Pump	55.81	1.35	....	.....	....	....	57.16
Lincoln Park Pump	59.65	7.65	.23	14.00	....	*14.68	96.21
Lake Honda Booster	2.25	....	2.42	.....	....	....	4.67
Newcomb Avenue Pump	121.28	10.95	5.32	574.48	....	* 7.56	719.59
Potrero Heights Pump	41.70	4.80	.69	76.24	....	*11.05	134.48
Precita Valley	106.76	1.95	5.40	.61	....	*43.69	158.41
Twin Peaks Pump	230.82	12.30	37.15	121.80	122.92	7.00 * 9.34	541.33
Sunset Booster Pump	391.32	26.70	.72	1,569.96	....	*11.65	2.000.35
Sunset Source	200.26	22.20	55.97	1,055.07	....	*30.23	1,363.73
Sunset Reservoir	25.39	....	....	.....	....	....	25.39
Olmstead Pump	124.15	13.65	....	339.17	....	* 5.52	482.49
Bernal Heights	232.03	18.30	11.70	36.66	73.25	*14.62	386.56
St. Germain Street Pump	79.31	7.80	....	13.80	....	* 9.22	110.13
Bay Bridge Pump	157.06	19.35	1.41	717.42	....	....	895.24
	$2,558.50	$217.80	$225.13	$7,664.65	$297.22	$198.76	$11,162.06
	$31,927.02	$274.62	$758.11	$18,258.01	$695.22	$1,296.71	$53.209.69

*Repairs to Equipment.

SCHEDULE No. 12

OPERATING EXPENSES 1937-38

City Distribution Division

	Labor	Transportation	Material	Compressor & Welder	Machine Shop	Contractual Service	Paving	Miscellaneous	Total
SOURCE OF SUPPLY									
Lake Merced	$4,285.38	$16.95	$659.83	.....	.....	$59.94	.....	$78.53	$5,100.63
	$4,285.38	$16.95	$659.83	.....	.....	$59.94	.....	$78.53	$5,100.63
PURIFICATION									
College Hill	$55.17	$8.55	$1,006.86	.....	$4.45	$189.52	.....	.....	$1,264.85
Lake Honda	6,285.12	5.10	552.62	.....	4.32	87.23	.....	.....	6,934.39
University Mound	178.62	17.25	2,379.66	.....	7.43	67.94	.....	.....	2,650.90
General	1,122.19	.15	20.13	.....	3.77	1.00	.....	.....	1,147.24
	$7,641.10	$31.05	$3,959.27	.....	$19.97	$345.99	.....	.....	$11,997.38
TRANSMISSION AND DISTRIBUTION									
Lake Honda Transmission Line	$62.01	$.60	$11.50	.....	$14.67	$1.50	.....	$35.30	$125.58
San Andres Transmission Line No. 1	456.66	3.75	248.69	$21.00	43.51	1.50	$35.80	14.43	825.34
San Andres-Lake Merced	24.79	3.40	3.98	.....	.....	.....	.....	.....	32.17
City Reservoirs	16,422.82	336.63	4,207.35	.....	378.53	1,406.99	.....	*152.00 33.65	22,937.97
Meter Expense	31,568.91	2,537.01	19,871.95	141.00	420.53	502.67	3,484.46	**129.11 47.90	58,703.54
Street Department Expense	14,815.99	465.30	26.28	.....	.....	61.95	.....	2.00	15,371.52
Repairs to Distribution Mains and Canals	39,038.39	1,780.61	5,792.98	1,097.97	2,596.75	1,345.32	3,747.25	28.75	55,428.02
Service Connection Repairs	40,668.22	4,494.18	8,673.30	2,249.25	813.44	4,465.94	9,908.23	52.77	71,325.33
Repairs to Buildings and Equipment	1,305.52	27.85	1,114.53	.....	878.17	161.60	.....	24.36	3,512.03
Miscellaneous Supplies and Expenses	2,703.43	46.65	984.74	.....	948.44	1,137.79	34.88	98.74	5,954.67
***Consumers Premises Expense	.....	.....	.....	.....	.....	.....	.....	.....	.....
Superintendence	30,200.14	1,408.74	568.23	.....	197.98	662.74	.....	.....	33,037.83
	$177,266.88	$11,104.72	$41,503.53	$3,509.22	$6,292.02	$9,748.00	$17,210.62	$619.01	$267,254.00

*Wesix Heater
**Jobbing and Sales
***Consumers Premises Expense Transferred to Commercial Expense

SCHEDULE No. 13

OPERATING EXPENSES 1937-38

Outside of San Francisco

SOURCE OF SUPPLY SURFACE SOURCE	Labor	Transportation	Materials	Contractual Service		Miscellaneous	Total
San Andres Reservoir	$13,522.84	$480.11	$1,995.30	$1,948.23		.....	$17,946.48
Crystal Springs Reservoir	27,436.69	1,905.14	4,769.91	3,702.71		.....	37,814.45
Pilarcitos Reservoir	11,139.62	861.05	2,017.01	1,271.84		$4.50	15,294.02
Calaveras Reservoir	11,440.61	704.53	920.70	1,015.28	Contract payment Cottages	1,286.58	15,367.70
	$63,539.76	$3,950.83	$9,702.92	$7,938.06		$1,291.08	$86,422.65
GROUND SOURCES							
Sunol Filter Beds	$6,127.10	$119.78	$376.30	$1,129.95	Sunol Stables	$538.35	$8,291.48
Pleasanton Wells	69.34	10.46	.....	.....		.....	79.80
	$6,196.44	$130.24	$376.30	$1,129.95		$538.35	$8,371.28
SUPPLY LINES							
Bay Division Pipe Lines	$8,572.85	$1,004.72	$3,767.63	$142.97	Electrical Survey	$500.01 18.34	$14,006.52
Stone Dam Aqueduct	6,486.46	177.90	319.70	127.03		.....	7,111.09
Pilarcitos Aqueduct	167.29	12.69	98.36	100.86		.....	379.20
Crystal Springs Supply Line	120.83	1.90	.41	.....		.....	123.14
Niles-Irvington Pipe Line	552.15	116.55	.....	.....		.....	668.70
Upper Alameda Tunnel	361.04	36.69	18.00	.....		.....	415.73
Upper Alameda Creek Dam	2,230.57	154.06	.41	.....		.....	2,385.04
Calaveras Pipe Line	250.36	32.05	1.09	.....		.....	283.50
	$18,741.55	$1,536.56	$4,205.60	$370.86		$518.35	$25,372.92
GENERAL EXPENSES							
Alameda System	$10,843.41	$601.39	$1,210.37	$1,203.98	Contract payment	$1,933.83	$15,820.05
					alter Sunol Cottages	27.07	
Peninsula System	30,861.48	1,852.13	2,773.26	2,912.98		34.72	38,434.57
	$41,704,89	$2,453.52	$3,983.63	$4,116.96		$1,995.62	$54,254.62
Total Outside of San Francisco	$130,182.64	$8,071.15	$18,268.45	$13,555.83		$4,343.40	$174,421.47

SCHEDULE No. 14

OPERATING EXPENSES 1937-1938
Outside of San Francisco

	Labor	Transportation	Materials	Fuel or Power	Machine Shop	Contractual Service	Miscellaneous	Total
PUMPING STATIONS								
Bay Division Pump	$4,722.07	$346.84	$114.07	$3,117.90	.....	$12.62	.....	$8,313.50
Belmont Pump	2,594.47	38.24	50.46	96.03	.....	307.83	.....	3,087.03
Crystal Springs Pump	8,894.36	746.42	889.27	50,287.10	.....	149.58	.....	60,966.73
Millbrae Pumps	387.79	.....	35.28	.....	.....	.....	.....	423.07
Pleasanton Pumps	2,393.01	65.41	26.57	1,257.73	.....	117.99	.....	3,860.71
Pleasanton Township Water District	875.62	66.63	100.78	1,990.31	.....	.....	$17.00	3,050.34
San Lorenzo Pump	78.19	199.55	.....	.....	.....	.....	.....	277.74
Peninsula General	.....	.....	.....	.....	.....	15.00	.....	15.00
Outside Pumping Expense	$19,945.51	$1,463.09	$1,216.43	$56,749.07	.....	$603.02	$17.00	$79,994.12
PURIFICATION								
Belmont Purification System	.....	$15.00	$54.98	.....	.....	$344.90	.....	$414.88
Crystal Springs	$2,149.70	189.64	6,758.04	.....	.....	892.56	.....	9,989.94
Pilarcitos Reservoir	51.00	11.63	129.16	.....	.....	.....	.....	191.79
San Andreas Reservoir	291.49	12.30	699.29	.....	.....	337.63	.....	1,340.71
San Andreas System No. 1	41.88	10.62	776.77	.....	.....	215.20	.....	1,044.47
San Andreas System No. 2	365.67	102.96	1,960.83	.....	.....	1,059.71	.....	3,489.17
San Mateo Screen Tank	113.41	6.70	58.77	.....	.....	.50	.....	179.38
Millbrae Laboratory	16,777.39	1,828.65	1,268.20	.....	.....	1,259.58	$122.57	21,256.39
Calaveras Reservoir	364.89	42.50	2,674.90	.....	.....	327.29	.....	3,409.58
Sunol	833.19	128.96	594.49	.....	.....	304.51	.....	1,861.15
Irvington Portal	835.38	226.12	765.95	.....	.....	367.28	.....	2,194.73
Calaveras Aerator Plant	860.03	88.62	26.51	.....	.....	371.64	.....	1,346.80
Calaveras Chlorinator	652.01	390.04	3,867.86	.....	.....	52.27	.....	4,962.18
Hetch Hetchy Junction Purification	2,234.64	.....	1,468.72	.....	.....	1,177.20	.....	4,880.56
Tesla Portal	988.00	196.10	2,223.35	.....	.....	681.59	.....	4,089.04
Alameda General	73.48	.....	7.50	.....	.....	12.50	.....	93.48
Peninsula General	10.18	.....	11.50	.....	.....	17.11	1.90	40.69
Outside Purification Expense	$26,642.34	$3,249.84	$23,346.82	.....	.....	$7,421.47	$124.47	$60,784.94
TRANSMISSION AND DISTRIBUTION								
Alameda Supply Line	$6.61	$287.89	.....	.....	.....	.....	.....	$294.50
Alameda Transmission Line	2,929.14	355.98	$413.93	.....	.....	$320.82	.....	4,019.87
Crystal Springs Pump Aqueduct	5,183.10	215.02	232.30	.....	.....	13.11	$30.00	5,673.53
Crystal Springs Transmission Lines	5.358.94	608.34	1,184.11	.....	$251.68	56.89	15.00	7,474.96
San Andreas Line No. 1	1,862.47	44.60	229.35	.....	.....	49.59	.....	2,186.01
San Andreas Line No. 2	1,755.92	67.76	152.75	.....	.....	8.67	.....	1,985.10
San Andreas Line-Merced Branch	530.52	1.20	10.58	.....	.....	4.94	.....	547.24
Alameda Supply Line	22.67	138.55	.....	.....	.....	103.85	.....	265.07
Niles Regulating Reservoir	2,407.79	7.28	.82	.....	.....	.....	.....	2,415.89
Meter Expense	2,914.26	710.96	906.13	.....	.....	36.81	13.73	4,581.89
Outside Transmission Lines Expense	$22,971.42	$2,437.58	$3,129.97	.....	$251.68	$594.68	$58.73	$29,444.06

SCHEDULE No. 15

OPERATING EXPENSES 1937-1938

COMMERCIAL EXPENSE	Labor	Transportation	Material	Compressor	Machine Shop	Contractual Service	Miscellaneous	Total
Collections	$87,015.04	$1,314.77	$160.83	....	.....	$24,510.58	.....	$113,001.22
Reading Meters	32,330.41	347.07	31.79	....	.....	764.17	$3.50	33,476.94
Bookkeeping Department	97,530.86	4.20	750.71	....	.....	956.82	.....	99,242.59
General and Miscellaneous	23,779.70	1.50	2,006.99	....	$70.81	7,028.12	210.16	33,097.28
Inspection and Service	40,704.63	7,796.06	110.41	$18.25	46.03	1,748.14	41.90	50,465.42
Shipping	9,802.10	1.20	1.45	....	.....	4,478.63	.....	14,283.38
*Consumers Premises	12,696.92	.....	.....	....	.....	268.00	.....	12,964.92
	$303,859.66	$9,464.80	$3,062.18	$18.25	$116.84	$39,754.46	$255.56	$356.531.75
GENERAL AND MISCELLANEOUS								
Salary of General Officers	$18,399.84	.....	.....	....	.....	.....	.....	$18,399.84
Salary of General Office Clerks	40,628.25	.....	.....	....	.....	.....	.....	40,628.25
Miscellaneous Supplies and Expense	1,540.68	$1.50	$2,002.20	....	$28.00	$3,615.56	$1,720.92	8,908.86
Public Utilities Commission Expense	.....	.....	.....	....	.....	.....	52,522.00	52,522.00
Mason Street Building Operations	15,319.02	.....	624.02	....	.....	5,625.72	.....	21,568.76
Advisory and Consulting Expense	.....	.....	.....	....	.....	7,293.75	.....	7,293.75
Telephone Operations	7,752.92	.....	.....	....	.....	7,541.55	.....	15,294.47
Repairs to Telephone System	6,497.23	1,030.10	1,190.67	....	.....	56.90	.....	8,774.90
General Engineering	25,290.06	2,809.36	1,834.56	....	.....	3,743.34	12.30	33,689.62
Hydrography	1,252.60	399.91	39.06	....	.....	413.20	.....	2,104.77
Rest Room and Guest Cottages	967.33	12.90	833.70	....	.....	431.24	.....	2,245.17
Mason Street Building Repairs	1,743.86	57.90	728.39	....	1,093.07	834.51	6,553.83	11,011.56
	$119,391.79	$4,311.67	$7,252.60	....	$1,121.07	$29,555.77	$60,809.05	$222,441.95
OTHER OPERATING EXPENSES								
Insurance Compensation	.....	.....	.....	....	.....	.....	$4,683.83	$4,683.83
Insurance Other	.....	.....	.....	....	.....	.....	5,282.72	5,282.72
Injuries and Damages	$1.12	.....	.....	....	.....	.....	1,128.34	1,129.46
Pensions	.....	.....	.....	....	.....	.....	39,860.19	39,860.19
Property Taxes	.....	.....	.....	....	.....	.....	240,130.61	240,130.61
Miscellaneous	.....	.....	.....	....	.....	$749.20	.....	749.20
	$1.12	.....	.....	....	.....	$749.20	$291,085.69	$291,836.01
	$119,392.91	$4,311.67	$7,252.60	....	$1,121.07	$30,304.97	$351,894.74	$514,277.96

*Consumers Premises Transferred from Transmission and Distribution.

SCHEDULE No. 16

ADDITIONS AND BETTERMENTS, YEAR 1937-1938

INSIDE OF SAN FRANCISCO:	Labor	Overhead	Material	Compressor and Welder	Paving	Contractual Service	Equipment	Miscellaneous	Total
Buildings, Structures and Grounds:									
Bronze Wickets, 425 Mason Street	$31.38	$4.73	.....	.....	.....	$368.00	.....	.....	$404.11
Garage and Cottage—University Md. Reservoir	13.64	2.06	.....	.....	.....	2,243.12	.....	.....	2,258.82
Garage at Bryant Street Yard	95.25	.48	$251.37	.....	$195.84	.....	.....	$13.33	556.27
Grading at Bryant Street Yard	137.00	.69	.....	.....	668.80	.....	$1.80	24.89	833.18
Iron Grills, 3rd Floor, 425 Mason Street	13.54	2.04	.....	.....	.....	177.00	.....	.....	192.58
Air Conditioning, 425 Mason Street	186.73	77.65	2.28	.....	.....	5,733.75	4.95	248.61	6,253.97
Electrical Outlets, 425 Mason Street	.....	.....	.....	.....	.....	274.00	.....	.....	274.00
	$477.54	$87.65	$253.65	.....	$864.64	$8,795.87	$6.75	$286.83	$10,772.93
Source of Water Supply:									
Replace Waste Water Flume—Lake Merced	$418.59	$62.79	.....	.....	.....	.....	$3.30	.....	$484.68
Pumping Station Equipment:									
Twin Peaks Pump	.....	.....	.....	.....	.....	$757.05	.....	.....	$757.05
Electric Motor	.....	.....	.....	.....	.....	70.70	.....	.....	70.70
	.....	.....	.....	.....	.....	$827.75	.....	.....	$827.75
Transmission and Distribution:									
Main Extensions—City Pipe System	$18,728.09	$2,460.49	$43,947.78	$518.50	$4,758.58	$27,630.96	$878.55	$1,102.26	$100,025.21
Meters	.....	.....	12,492.53	.....	.....	.....	.....	.....	12,492.53
Meters Installed	2,536.32	247.90	4,006.49	27.00	533.90	71.75	159.16	128.44	7,710.96
Services	12,630.60	1,514.42	5,985.88	822.50	2,591.51	614.87	1,378.83	1,003.99	26,542.60
	$33,895.01	$4,222.81	$66,432.68	$1,368.00	$7,883.99	$28,317.58	$2,416.54	$2,234.69	$146,771.30
Total Inside San Francisco	$34,791.14	$4,373.25	$66,686.33	$1,368.00	$8,748.63	$37,941.20	$2,426.59	$2,521.52	$158,856.66

OUTSIDE OF SAN FRANCISCO:

Buildings, Structures and Grounds:									
Davis Tunnel Cottage	$481.48	$2.41	.....	.....	.....	$12,102.76	.....	.....	$12,586.65
Paving at Water Temple—Sunol	39.25	.20	.....	.....	.....	1,986.94	.....	.....	2,026.39
	$520.73	$2.61	.....	.....	.....	$14,089.70	.....	.....	$14,613.04
Source of Water Supply:									
Construct Pilarcitos Spillway	$2,033.91	$233.50	$50.20	.....	.....	$28,525.44	$10.96	.....	$30,854.01
Rip Rap—San Andres Spillway	641.69	96.26	.....	.....	.....	11,678.69	60.06	.....	12,476.70
Septic Tank—Calaveras Reservoir	14.37	2.16	.....	.....	.....	436.25	.....	.....	452.78
Bald Hill Forebay—San Andres Reservoir	601.71	90.26	26.19	.....	.....	1,138.37	56.47	.....	1,913.00
Observation Wells—San Andres & Pilarcitos Res.	652.36	3.26	.....	.....	.....	4,043.25	157.57	$91.33	4,947.77
	$3,944.04	$425.44	$76.39	.....	.....	$45,822.00	$285.06	$91.33	$50,644.26
Purification System:									
Equipment for Millbrae Laboratory	.....	.....	.....	.....	.....	$89.70	.....	.....	$89.70
Equipment for Tesla Portal Chlorinating Sta...	.....	.....	.....	.....	.....	37.55	.....	.....	37.55
	.....	.....	.....	.....	.....	$127.25	.....	.....	$127.25
Transmission and Distribution:									
Meters Installed	$321.57	$51.45	$4,586.23	.....	.....	$24.50	$56.88	.....	$5,040.63
Main Extensions	6,911.86	421.93	2,288.03	$184.00	.....	5,848.10	39.81	$622.73	16,316.46
	$7,233.43	$473.38	$6,874.26	$184.00	.....	$5,872.60	$96.69	$622.73	$21,357.09
General Equipment:									
Office and Miscellaneous	.....	.....	.....	.....	.....	.....	$14,242.65	.....	$14,242.65
Automobiles	.....	.....	.....	.....	.....	.....	12,120.04	.....	12,120.04
	.....	.....	.....	.....	.....	.....	$26,362.69	.....	$26,362.69
Total Outside of San Francisco	$11,698.20	$901.43	$6,950.65	$184.00	.....	$65,911.55	$26,744.44	$714.06	$113,104.33
Grand Total	$46,489.34	$5,274.68	$73,636.98	$1,552.00	$8,748.63	$103,852.75	$29,171.03	$3,235.58	$271,960.99

APPENDIX

TO

REPORT OF SAN FRANCISCO WATER DEPARTMENT

CONTENTS

WATER PRODUCTION DIVISION

Table No. 1	Rainfall by Months Seasons 1934-35 to 1937-38
Table No. 1-A	Seasonal Rainfall—Watershed Stations Seasons 1934-35 to 1937-38
Table No. 2	Storage in Million Gallons
Table No. 3	Water Drawn from Hetch Hetchy and Auxiliary Sources
Table No. 4	Seasonal Draft on Surface Storage and Auxiliary Sources
Table No. 5	Consumption in Million Gallons per day
Table No. 5-A	Average Daily Consumption since 1865
Table No. 6	Delivery Through Pipe Lines in Million Gallons Daily
Table No. 7	Source of Water Transported Across San Francisco Bay
Table No. 8	Comparative Pumping Station Costs

CITY DISTRIBUTION DIVISION

Table No. 9	Average Daily Consumption by Districts
Table No. 9-A	Peak Consumption by Districts
Table No. 10	Unit Cost for Meter Maintenance
Table No. 11	Unit Cost of Meter Installation
Table No. 12	Unit Cost for Service Connection
Table No. 13	Pipe Record for Fiscal Year
Table No. 13-A	Valve Record

ENGINEERING DIVISION

Table No. 14	Contract Data

WATER SALES DIVISION

Table No. 15	Gross Metered Services, Revenues, etc.
Table No. 15-A	Charge of Non-Paying Municipal Accounts
Table No. 15-B	Charge of Paying Municipal Accounts
Table No. 16	Meters Installed—San Francisco District (Revenue and Non Revenue Producing)—June 30, 1938
Table No. 16-A	Meters Installed—Suburban District (Revenue and Non Revenue Producing)—June 30, 1938
Table No. 17	Street Main Taps and Service—Connections Record
Table No. 18	Official Meter Tests
Table No. 19	Bad Water Complaints
Table No. 20	No Water Complaints
Table No. 21	Record of Building Permits
Table No. 22	Number of Building Permits
Table No. 23	Contract Jobs Handled

AGRICULTURAL DIVISION

Table No. 24 Returns and Expenses—Agricultural Division

TABLE No. 1

RAINFALL BY MONTHS FOR SAN FRANCISCO
SEASONS 1934-35 to 1937-38
From U. S. Weather Bureau

Month	Season 1934-35	Season 1935-36	Season 1936-37	Season 1937-38	Normal
July	0.01	0	0.03	T	0.02
August	T	0.25	0.02	T	0.01
September	0.13	0.08	T	T	0.45
October	0.88	1.44	0.69	0.90	1.12
November	3.76	1.24	0.01	2.46	2.35
December	4.06	3.25	2.94	3.73	3.95
January	6.23	5.77	5.26	2.65	4.54
February	2.38	10.06	4.88	8.49	3.85
March	2.31	1.01	7.05	5.73	3.14
April	3.45	1.09	0.86	1.52	1.61
May	0.01	0.49	0.06	T	0.80
June	0	0.28	0.59	0	0.18
Totals	23.22	24.96	22.39	25.48	22.02

"T" trace, amount too small to measure. 25.48 is 115.7% of normal.

TABLE No. 1-A

SEASONAL RAINFALL—WATERSHED STATIONS
SEASONS 1934-35 to 1937-38
Water Department Records

Station	Season 1934-35	Season 1935-36	Season 1936-37	Season 1937-38	Normal
San Francisco	23.22	24.96	22.39	25.48	22.02
Pilarcitos	39.25	41.56	43.90	51.58	46.26
San Andres	30.77	27.48	34.85	40.64	38.86
Crystal Springs—Upper	30.05	26.53	31.90	37.00	33.26
Crystal Springs—Lower	28.61	25.75	30.76	35.81	28.33
Crystal Springs Cottage	27.54	23.58	28.79	34.66	26.57
Lake Merced	22.93	23.44	24.15	26.91	21.27
Pleasanton	19.99	20.44	22.09	25.89	21.93
Calaveras	23.55	21.94	23.18	26.92	25.21
Sunol	21.23	20.44	21.50	25.75	21.10
Niles	19.10	16.89	19.34	22.09	20.40
Hetch Hetchy	42.22	37.94	37.23	55.60	33.11
Lake Eleanor	55.09	48.08	46.08	64.61	40.21
Moccasin	36.26	31.84	31.68	41.22	25.56

TABLE No. 2

STORAGE IN MILLION GALLONS

	1935		1936		1937		1938	
	Max. May 12	Min. Dec. 28	Max. May 15	Min. Dec. 26	Max. Mar. 31	Min. Dec. 9	Max. Mar. 25	As of June 30
Calaveras	15,623	6,187	22,317	16,942	31,463	16,766	31,569	24,486
Crystal Springs	9,260	7,419	14,938	15,474	18,789	17,741	20,170	17,165
San Andres	4,051	3,568	4,633	3,573	6,048	4,797	5,876	5,638
Pilarcitos	796	212	605	277	858	258	929	802
Lake Merced	1,461	1,381	1,612	1,540	1,882	1,835	2,233	2,212
City Reservoirs	107	116	104	116	120	125	133	156
Total	31,298	18,883	44,209	37,922	59,160	41,522	60,910	50,459

TABLE No. 3

WATER DRAWN FROM HETCH HETCHY AND AUXILIARY SOURCES

(Million Gallons)

	1934-35	1935-36	1936-37	1937-38
Hetch Hetchy Water Supply	12,117	13,158	10,287	1,181
Pleasanton Wells	1,803	393*	417*	352*
Sunset Wells	1,875	294	9	0
Total	15,795	13,845	10,713	1,533

*Include the following quantities in "Advance" releases to Alameda County Water District:

1935 4,702 million gallons
1936 1,585 million gallons
1937 3,395 million gallons

TABLE No. 4

SEASONAL DRAFT ON SURFACE STORAGE AND AUXILIARY SOURCES

(Million Gallons)

1	2	3	4	5	6	7	8	9
				Seasonal Draft on Storage and Auxiliary Sources				
Year	Maximum Storage	Minimum Storage	Storage Increase During Season	Storage Decrease During Season	From Pleasanton Wells	From Sunset Wells	From E.B.M.U.D. and H.H.W.S.	Total Seasonal Draft
1918	20,388	12,382	....	8,006	3,603	....	....	11,609
1919	22,388	13,160	10,006	9,228	2,000	....	....	11,228
1920	16,578	9,986	3,418	6,592	2,871	....	....	9,463
1921	19,788	11,502	9,802	8,286	317	....	....	8,603
1922	20,091	12,770	8,589	7,321	397	....	....	7,718
1923	22,649	11,721	9,879	10,928	515	....	....	11,443
1924	11,721	4,266	0	7,455	4,726	....	....	12,181
1925	13,585	4,959	9,319	8,626	2,666	....	....	11,292
1926	17,859	9,618	12,900	8,241	2,536	....	....	10,777
1927	30,581	20,000	20,963	10,581	2,104	....	....	12,685
1928	30,687	18,657	10,687	12,030	762	....	....	12,792
1929	20,265	8,906	1,608	11,359	4,054	....	....	15,413
1930	16,475	6,441	7,569	10,034	4,073	341	....	14,448
1931	6,779	4,291	338	2,488	3,812	2,054	7,731	16,085
1932	30,916	18,650	26,625	12,266	277	2,083	158	14,784
1933	23,389	12,158	4,739	11,231	257	1,991	0	13,479
1934	16,998	7,246	4,840	9,752	2,655	1,914	1,390	15,711
1935	31,298	18,883	24,052	12,415	412	1,209	5,928	*19,964
1936	44,209	37,922	25,326	6,287	409	9	10,776	*17,481
1937	59,160	41,522	21,238	17,638	386	....	1,605	*19,629
1938	60,910	....	19,388	....	....	....	....	....
Av'r'ge	25,558	14,251	11,565	9,538	1,941	480	1,379	13,338

NOTE: Column 9 does not include water drawn for consumption directly from run-off. It represents depletion in storage during dry season if all the water for consumption during dry season were drawn from storage.

*For local consumption only.

TABLE No. 5

CONSUMPTION IN MILLION GALLONS PER DAY

Year	San Francisco	Suburban	Total System	Max. Day	Min. Day	Max. Month	Min. Month
1930-31	49.2	3.1	52.3	66.7	41.3	57.8	47.0
1931-32	49.3	2.8	52.1	65.6	39.6	59.4	47.5
1932-33	46.4	2.7	49.1	60.4	39.9	54.3	44.6
1933-34	47.3	2.6	49.9	64.3	39.1	53.7	45.1
1934-35	48.1	2.4	50.5	65.4	41.3	58.1	46.2
1935-36	52.3	2.5	54.8	68.0	43.0	62.1	50.3
1936-37	55.1	3.4	58.5	70.7	45.7	63.8	51.8
1937-38	53.3	5.0	58.3	72.4	46.7	65.4	53.4

TABLE No. 5-A

AVERAGE DAILY CONSUMPTION SINCE 1865

Year	M.G.D.	Year	M.G.D.	Year	M.G.D.	Year	M.G.D.
1865	2.4	1885	17.0	1905	34.9	1925	42.6
1870	6.0	1890	20.4	1910	35.6	1928	50.1
1875	11.7	1895	19.9	1915	42.6	1929	52.1
1880	12.7	1900	25.5	1920	36.2	1930	52.1

TABLE No. 6

DELIVERY THROUGH PIPE LINES IN MILLION GALLONS DAILY

	1934-35	1935-36	1936-37	1937-38
Water Transported into San Francisco:				
San Andres 54" pipe	14.1	22.6	26.9	28.8
College Hill 30" Supply Line	5.9	6.6	7.3	6.0
Baden-Merced Branch 30" Pipe	5.8	4.1	2.4	0.6
Crystal Springs 44" Pipe	17.2	18.2	15.9	0.0
Crystal Springs 60" Pipe	....	....	2.6	17.9
From Sunset Wells	5.1	0.8	0.0	0.0
Total San Francisco Consumption	48.1	52.3	55.1	53.3
Water Transported from Crystal Springs to San Andres System:				
Crystal Springs Pump Aqueduct, etc...	25.1	22.1	29.5	20.4
Water Transported Across S. F. Bay:				
Hetch Hetchy Bay Division 60" and 72" Pipes to Crystal Springs	30.9	37.5	50.1	31.2
Alameda 36" and 54" Pipe to Millbrae.	15.2	14.1	0.0	0.0
	46.1	51.6	50.1	31.2

TABLE No. 7

SOURCE OF WATER TRANSPORTED ACROSS SAN FRANCISCO BAY YEARLY AVERAGE MILLION GALLONS DAILY

	1934-35	1935-36	1936-37	1937-38
Pleasanton Wells	4.7	0.8	0.0	0.0
Sunol Filters and Calaveras Res.	8.2	14.8	22.6	31.2
Hetch Hetchy Water Supply	33.2	36.0	27.5	0.0
Total	46.1	51.6	50.1	31.2

TABLE No. 8

COMPARATIVE PUMPING STATION COSTS

	1934–35	1935–36	1936–37	1937–38
BELMONT PUMPS				
Water Pumped, gallons	5,533,645,980	4,918,838,384	Not operating	Not operating
Gas burned, cu. ft.	121,299,612	112,494,559		
Fuel Cost	$16,602.45	$18,396.87	$0.00	$0.00
Labor Cost	40,815.95	41,182.08	3,008.57	2,594.47
Miscellaneous	1,442.09	1,249.35	291.66	492.56
	$58,860.49	$60,828.30	$3,300.23	$3,087.03
Cost per mil. gal.	10.64	12.37		
Cost per mil. gal. ft.	.0420	.0482		
CRYSTAL SPRINGS BOOSTER PUMP				
Water pumped, gallons	Not operating	589,340,000	48,850,000	Not operating
Electric Power, KWH		271,840	22,525	
Power Cost		$1,636.12	$153.92	
Labor Cost		600.00	49.30	
Miscellaneous		76.00	10.00	
		$2,312.12	$213.22	
Cost per mil. gal.		3.92	4.36	
Cost per mil. gal. ft.		.1937	.172	
SAN ANDRES PUMP				
Water pumped, gallons	9,003,640,000	8,081,690,000	10,749,520,000	7,458,450,000
Electric power, KWH	9,984,000	8,323,160	10,454,275	6,560,000
Power Cost	$71,680.50	$60,095.79	$73.045.02	$50,287.10
Labor Cost	7,882.32	7,957.79	7,695.32	8,894.36
Miscellaneous	1,348.17	1,010.00	1,707.80	1,785.27
	$80,910.99	$69,063.58	$82,448.14	$60,966.73
Cost per mil. gal.	8.986	8.546	7.67	8.17
Cost per mil. gal. ft.	.0345	.0350	.0341	.0376
PULGAS PUMPS				
Water pumped, gallons	1,191,170,000			
Electric Power, KWH	1,124,800			
Power Cost	$16,202.22	$1,925.27	$2,425.31	$3,117.90
Labor Cost	4,824.49	4,225.54	3,176.17	4,722.07
Miscellaneous	396.39	746.69	579.35	473.53
	$21,423.10	$6,897.50	$6,180.83	$8,313.50
Cost per mil. gal.	17.98			
Cost per mil. gal. ft.	.1042			
CENTRAL PUMPS				
Water pumped, gallons	1,993,747,000	2,453,210,000	2,652,123,000	2,489,930,000
Gas burned, cu. ft.	89,109,000	79,295,000	66,077,000	53,370,000
Oil burned, gals.			18,647	141
Fuel Cost	$13,098.36	$12,671.76	$11,298.12	$10,593.36
Labor Cost	26,354.68	27,306.03	28,499.03	28,619.35
Miscellaneous	1,078.42	881.78	2,621.20	1,973.56
	$40,531.46	$40,859.57	$42,418.35	$41,186.27
Cost per mil. gal.	20.33	16.66	15.99	16.54

Note: Belmont Pumps were shut down June 6, 1936. Pulgas Pumps shut down October 23, 1934. Operated since then only intermittently to supply consumers on line when Bay Crossing Pipe is down.

TABLE No. 9

AVERAGE DAILY CONSUMPTION BY DISTRICTS

(Gallons)

District	1937-38	1936-37	Increase or Decrease	% Increase or Decrease
Forest Hill	289,360	291,159	—1,779	—0.6
Stanford Heights	6,822,290	7,264,732	—442,442	—6.5
Lake Honda	21,337,152	21,431,531	—94,379	—0.4
College Hill	6,461,353	7,205,351	—743,998	—11.5
University Mound	17,768,912	18,643,247	—874,335	—4.9
Merced Manor	607,819	233,153	+374,666	+61.6
Total City	53,286,886	55,069,173	—1,782,287	—3.3
Suburban	4,989,235	3,417,408	+1,571,827	+31.5
Total Entire System	58,276,121	58,486,581	—210,460	—0.4

TABLE No. 9-A

PEAK CONSUMPTION BY DISTRICTS

District	1937–38	1936–37	1935–36
Forest Hill	496,384	556,725	479,389
Stanford Heights	8,842,000	9,089,000	9,285,000
Lake Honda	26,386,346	25,514,000	25,646,502
College Hill	8,458,714	8,893,000	9,143,000
University Mound	21,968,000	22,434,000	23,200,000
Merced Manor	1,459,000	1,479,000	0
San Francisco (combined)	65,710,000	64,807,000	63,358,000
Suburban	11,295,000	1,912,000	7,437,000
System Peak	72,359,000	70,679,000	67,953,000

TABLE No. 10

UNIT COST FOR METER MAINTENANCE

Year	Meters In Use	Total Cost	Cost Per Meter	Labor Cost Per Meter	Material Cost Per Meter
1932-33	114,677	$44,101.57	$0.39	$0.220	$0.122
1933-34	114,914	44,457.18	0.39	0.207	0.137
1934-35	115,881	44,031.65	0.38	0.210	0.119
1935-36	114,482	65,775.43	0.58	0.296	0.203
1936-37	116,606	77,231.63	0.66	0.318	0.214
1937-38	117,424	58,703.54	0.50	0.278	0.172

TABLE No. 11

UNIT COST OF METER INSTALLATION

	1937-38	1936-37	1935-36	1934-35
Meters set	2,597	3,257	2,173	925
Per cent ¾" and smaller	90.8	92.0	89.5	84.7
Labor	$0.98	$1.08	$1.17	$1.06
Supervision	0.09	0.28	0.41	0.97
Meter	9.58	9.92	11.71	12.85
Material	1.54	0.45	0.57	3.39
Equipment	0.07	0.02	0.12	0.12
Paving	0.21	0.20	0.17	0.28
Miscellaneous	0.08	0.20	0.04	0.43
Total	$12.55	$12.15	$14.15	$19.10

TABLE No. 12

UNIT COST OF SERVICE CONNECTION

	1937-38	1936-37	1935-36	1934-35	1933-34
Services Installed	1,916	2,082	1,548	470	491
Per cent ¾"	94.8	93.4	92.4	85.5	80.0
Labor	$6.60	$5.99	$7.10	$5.75	$7.35
Supervision	.79	.43	.58	1.91	1.83
Material	3.12	3.97	4.64	5.60	5.97
Equipment	1.15	.93	1.49	.47	.97
Miscellaneous	.52	1.68	.96	1.25	3.40
Paving	1.67	2.00	1.66	3.02	1.66
Total	$13.85	$15.00	$16.43	$18.00	$20.19

TABLE No. 13

PIPE RECORD FOR FISCAL YEAR
July 1, 1937, to June 30, 1938

Wrought Iron and Steel	Size	Total Pipe in Ground July 1, 1937	Pipe Laid 1937-1938	Total	Taken Out or Abandoned 1937-1938	Total Pipe in Ground June 30, 1938
	½″	1,644′	0′	1,644′	0′	1,644′
	¾″	12,551	0	12,551	0	12,551
	1″	42,987	172	43,159	572	42,587
	1¼″	4,168	0	4,168	240	3,928
	1½″	177,313	0	177,313	4,852	172,461
	2″	309,220	2,091	311,311	5,941	305,370
Galv.	3″	28,024	0	28,024	0	28,024
G. & B.	4″	8,809	0	8,809	0	8,809
Galv.	5″	804	0	804	0	804
Dip.	6″	3,832	0	3,832	0	3,832
Galv.	6″	117	54	171	0	171
Galv.	8″	17	0	17	0	17
Galv.	12″	6,555	0	6,555	0	6,555
	13″	456	0	456	0	456
	16″	25,587	0	25,587	0	25,587
	20″	65,587	141	65,728	0	65,728
	22″	24,377	0	24,377	0	24,377
	23½″	9,087	0	9,087	0	9,087
	24″	26,443	0	26,443	0	26,443
	30″	26,890	63	26,953	0	26,953
	33″	2,409	0	2,409	0	2,409
	36″	40,404	396	40,800	0	40,800
	37½″	8,896	0	8,896	0	8,896
	44″	14,818	0	14,818	0	14,818
	48″	11,504	0	11,504	0	11,504
	60″	0	9,981	9,981	0	9,981
Totals		852,499′	12,898′	865,397′	11,605′	853,792′

TABLE No. 13—PIPE RECORD FOR FISCAL YEAR—Continued
July 1, 1937, to June 30, 1938

Wrought Iron and Steel Size	Total Pipe in Ground July 1, 1937	Pipe Laid 1937-1938	Total	Taken Out or Abandoned 1937-1938	Total Pipe in Ground June 30, 1938
Cast Iron Pipe					
2″	10,346′	4,247′	14,593′	0′	14,593′
3″	62,330	0	62,330	0	62,330
4″	476,923	6,136	483,059	1,438	481,621
6″	1,466,858	17,406	1,484,264	0	1,484,264
8″	1,304,559	13,108	1,317,667	0	1,317,667
10″	6,873	0	6,873	0	6,873
12″	389,314	515	389,829	0	389,829
16″	240,738	544	241,282	0	241,282
20″	22,642	0	22,642	0	22,642
22″	19,058	0	19,058	0	19,058
24″	52,171	0	52,171	0	52,171
30″	6,138	0	6,138	0	6,138
Total	4,057,950′	41,956′	4,099,906′	1,438′	4,098,468′
Grand Total	4,910,449′	54,854′	4,965,303′	13,043′	4,952,260′
Total Miles	930.0	10.4	940.4	2.5	937.9

TABLE No. 13-A
VALVE RECORD
In the City Distribution Division, June 30, 1938

Gates		Service Gates		Stop Cocks		Blow-offs		Air Valves		Check Valves	
2″	53	3″	334	⅝″	18	¾″	9	¾″	30	1½″	7
3″	238	4″	285	¾″	135	1″	45	1″	9	2″	10
4″	998	6″	166	1″	190	1½″	287	1½″	283	3″	1
6″	2,958	8″	96	1½″	962	2″	772	2″	208	4″	7
8″	2,718	12″	3	2″	2,667	3″	179	3″	5	6″	19
10″	6					4″	152	4″	1	8″	19
12″	739					6″	142	6″	12	12″	3
16″	368					8″	89	8″	202	16″	3
20″	23					12″	22				
22″	20					16″	2				
24″	57										
30″	21										
36″	16										
37½″	2										
42″	1										
48″	1										

TABLE No. 14

CURRENT CONTRACT DATA—1937-38

Contract No.	Title of Contract	Division	Contractor	Date of Award	Date Completed	% Complete 6/30/38	Bid Price	Contract Payments to 6/30/38	Date of Final Payment
*108	Laying 60″ Steel Sunset Reservoir Discharge Main	City Dist.	Williams Bros. & Haas, Inc.	10/25/37	6/14/38	100%	$214,816.15	$222,184.65	6/30/38
*111	Conrete Lining, Roof and Control Works for University Mound Reservoir	City Dist.	MacDonald & Kahn Co., Ltd.	11/ 2/36	12/31/37	100%	692,916.00	680,020.87	12/31/37
*112	Crystal Springs Pipe Line No. 2—Crystal Springs Dam to Burlingame	Peninsula	Williams Bros. & Haas, Inc.	12/21/36	12/31/37	100%	644,185.95	658,615.26	12/31/37
*120	Concrete Lining, Roof and Control Works for Sunset Reservoir	City Dist.	MacDonald & Kahn Co., Ltd.	7/ 8/37	6/24/38	100%	793,397.00	780,234.95	6/30/38
137	Connection at County Line	City Dist.	S. F. Water Dept.	4/26/37	8/10/37	100%	2,544.50	2,510.00	.....
141	Replace Portion of Stone Dam Aqueduct with 48″ Concrete Pipe	Peninsula	Sibley Grading & Teaming Co.	5/24/37	9/30/37	100%	34,709.50	34,125.95	6/30/38
142	Furnishing and Installing Air Conditioning System at 425 Mason St. Bldg.	General	Cochran & St. John, Ltd.	7/12/37	10/26/37	100%	5,712.00	5,712.00	10/31/37
143	Relocate a Portion of San Andres 30″ Pipe in Holy Cross Cemetery	Peninsula	Martin Murphy	5/12/37	8/28/37	100%	5,097.50	5,005.60	8/24/37
144	Laying 2″, 4″, 6″ and 8″ C.I. Mains in Palmetto, St. Charles, Commercial and Emery Lane	City Dist.	E. J. Treacy	6/14/37	7/30/37	100%	1,229.90	1,105.26	7/30/37
145	Drilling Observation Wells at San Andres and Pilarcitos Dams	Peninsula	Robert Garcia	6/14/37	9/20/37	100%	4,120.00	4,017.20	9/22/37
146	Repaving Street and Sidewalk Openings for the year 1937-38	City Dist.	Lowrie Paving Co.	6/28/37	6/30/38	100%	36,743.00	28,026.39	6/30/38
147	Laying 6″ C.I. Main in 30th and 45th Avenues in Parkside Areas	City Dist.	S. F. Water Dept.	8/ 9/37	9/11/37	100%	1,181.45	1,005.82	.....
148	Alterations on 6th Floor at 425 Mason St.	General	Frank J. Reilly Co.	8/ 9/37	10/29/37	100%	4,831.00	4,831.00	10/31/37
149	Laying 8″ C.I. Mains in Harrison and 16th Sts., from 15th St. to Bryant	City Dist.	E. J. Treacy	8/ 9/37	10/ 7/37	100%	1,463.80	1,497.13	10/31/37
150	Reconstruction of Pilarcitos Spillway	Peninsula	W. J. Tobin	8/23/37	12/10/37	100%	27,126.00	27,698.25	12/22/37
151	Laying 2″, 6″ and 8″ C.I. Mains in Greenwich, 22nd and Arkansas Sts., and in Harwood Alley	City Dist.	S. F. Water Dept.	8/23/37	9/22/37	100%	1,715.70	1,527.87	.....
152	Laying Miscellaneous Pipe Lines in S. F.	City Dist.	E. J. Treacy	10/11/37	1/ 6/38	100%	5.761.65	5,628.55	1/22/38
153	Gathering and Delivering Walnut Crop at Sunol Walnut Orchard	Agricultural	Charles H. Schween and Son	9/27/37	11/13/37	100%	5,865.00	5,277.15	11/16/37
154	Laying 16″ C.I. Main in Van Ness Ave., North Point to Bay St.	City Dist.	E. J. Treacy	10/25/37	1/ 4/38	100%	1,154.50	1,436.08	1/31/38

155	Laying 4″ and 8″ C.I. Mains in Silver Ave., Topeka and Shipley Sts.	City Dist.	E. J. Treacy	10/19/37	12/24/37	100%	1,801.84	1,591.16	12/31/37
156	Construction of Palo Alto Pipe Line	Peninsula	Macco-Robertson, Ltd.	10/25/37	.....	91%	213,620.00	163,898.86	.....
158R	Laying 2″ and 6″ C.I. Mains in Encline Court	City Dist.	W. J. Tobin	12/13/37	2/ 6/38	100%	668.50	729.82	2/21/38
159	Placing Rip Rap at San Andres Spillway	Peninsula	W. O. Tyson	11/22/37	3/10/38	100%	11,650.00	11,639.50	3/17/38
160	Laying 8″ C.I. Main in 19th Ave.—Taraval to Wawona Sts.	City Dist.	W. J. Tobin	12/27/37	2/17/38	100%	1,161.90	1,068.52	2/24/38
161	Laying 6″ and 8″ C.I. Mains in Phelps, Winding Way and Naylor Sts.	City Dist.	Lowrie Paving Co.	12/13/37	1/ 4/38	100%	1,817.00	1,719.79	1/22/38
162	Laying 4″, 6″ and 8″ C.I. Mains in Geneva Terraces and Mt. Davidson Subdivision	City Dist.	E. J. Treacy	12/13/37	4/25/38	100%	2,271.15	2,163.09	5/16/38
163	Raising Forebay Structures for Bald Hill Tunnel	Peninsula	Miller & McGillis	12/13/37	2/18/38	100%	1,011.10	1,109.29	2/23/38
164	Laying 6″ and 8″ C.I. Mains in Sweeny and De-Haro Sts.	City Dist.	W. J. Tobin	5/ 9/38	6/ 7/38	100%	776.95	695.98	6/15/38
165	Furnish and Install Sidewalk Elevator at 425 Mason St.	General	San Francisco Elevator Co.	12/14/37	3/30/38	100%	1,647.00	1,647.00	4/28/38
**166	Construction of Temple and Other Improvements at Pulgas Outfall	Peninsula	W. O. Tyson	2/14/38	.....	87%	37,318.40	28,997.91	.....
167	Alterations and Garage for Keeper's Cottage at University Mound Reservoir	City Dist.	Peter Sartorio	2/28/38	4/29/38	100%	2,158.00	2,221.00	5/28/38
168	Laying 6″ and 8″ C.I. Mains in 29th Ave., Quintara to Pacheco	City Dist.	Martin Murphy	2/14/38	4/ 6/38	100%	561.40	555.01	4/30/38
169	Alterations for Calaveras and Sunol Cottages	Alameda	A. Frederick Anderson	3/15/38	6/ 7/38	100%	2,493.00	2,537.66	6/16/38
170	Laying 4″ C.I. Mains in Shawnee Ave., Delano Ave. West	City Dist.	Martin Murphy	2/28/38	4/ 5/38	100%	484.00	455.65	4/20/38
171	Laying 4″ and 8″ C.I. Mains in Hunters Point Boulevard and Silver Ave.	City Dist.	E. J. Treacy	3/15/38	5/ 7/38	100%	1,365.00	1,495.44	5/12/38
173	Laying 6″ and 8″ C.I. Mains in 15th Ave., Market St. and Montgomery St.	City Dist.	Fay Improvement Co.	3/28/38	5/18/38	100%	3,438.55	3,165.64	5/27/38
174	Removing, Furnishing and Installing Condenser Tubes at Central Pumps	City Dist.	Calif. Steel Products Co.	4/11/38	.....	.....	4,210.00	None	.....
175	Laying 6″ C.I. Mains in 48th, 41st and Esmeralda Aves., and in Sweeny St.	City Dist.	Lowrie Paving Co.	4/11/38	5/18/38	100%	1,949.50	1,838.01	5/28/38
176	Laying 6″ C.I. Mains in Girard, Mansell and Arlington Sts.	City Dist.	E. J. Treacy	6/13/38	.....	None	2,575.60	None	.....
177	Laying 4″, 6″ and 8″ C.I. Mains in Section 1 of Lakeside Subdivision No. 2	City Dist.	W. J. Tobin	6/13/38	6/18/38	100%	4,034.20	1,006.90	.....
178	Repaving Street and Sidewalk Openings for the year 1938-39	City Dist.	Pacific Pavements Co., Ltd.	6/13/38	.....	None	37,185.00	None	.....

*P.W.A. Docket 1510 (1933)
**P.W.A. Docket 1132 (1935)

TABLE No. 15

Gross Metered Service Revenues, Service Charges and Special Service Revenues. Also Record of Refunds, Allowances, Adjustments, Collections and Balances Due.

Comparisons—Fiscal Years 1934-35 to 1937-38.

	1934-35	1935-36	1936-37	1937-38
Metered Service—Standard Rates				
Residential	$2,757,225	$2,693,267	$2,809,315	$2,885,138
Commercial (Incl. Contrs.)	2,652,935	2,571,334	2,659,928	2,618,099
Industrial	404,637	409,045	437,155	406,740
G. G. Int. Exposition	.....	.....	.....	5,233
Municipal	259,970	234,361	259,090	276,771
Docks	68,583	64,613	61,329	56,668
Suburban	250,766	274,373	325,094	344,225
Total	$6,394.116	$6,246,993	$6,551,911	$6,592,874
For Water Delivered	$5,234,564	$5,136,455	$5,414,263	$5,431,909
Ratio	81.9%	82.2%	82.7%	82.4%
Service Charges	1,159,552	1,110,538	1,137,648	1,160,965
Ratio	18.1%	17.8%	17.3%	17.6%
Special Service				
Fire Hydrants (S. F.)	$177,447	$217,563	$221,859	$223,972
Street Work and Sewers	216	248	306	291
Contractors—Flat Rates	742	775	2,360	1,825
Shipping—Hose Truck	38,987	38,146	33,466	32,087
Suburban—Special Contracts.	27,585	39,193	39,746	31,496
Total	$244,977	$295,925	$297,737	$289,671
Total Gross Charges	$6,639,093	$6,542,918	$6,849,648*	$6,882,545†
Deductions				
Cash Refunds	$2,074	$929	$1,061	$1,117
Allowances and Adjustments.	20,137	20,428	21,673	18,217
Profit and Loss	70,564	8,054	4,855	3,418
Total	$92,775	$29,411	$27,589	$22,752
Net Sales	$6,546,318	$6,513,507	$6,822,059*	$6,859,793†
Collections	6,278,202	6,153,467	6,398,425	6,436,241
Balances Due on Cons. Accts.	499,265	467,959	473,418	455,798

*Affected by rate reduction of January 1, 1937, amounting to $29,903.

†{Affected by rate reduction of January 1, 1937, amounting to $42,060.
{Affected by rate reduction of January 1, 1938, amounting to $127,153.

TABLE No. 15-A

CHARGES OF NON-PAYING MUNICIPAL ACCOUNTS
For the Fiscal Years 1936-37 and 1937-38

	1936-1937	1937-1938	Increase	Decrease
Hydrant	$221,859.30	$223,972.30	$2,113.00	.....
Parks	69,886.72	85,328.87	15,442.15	.....
Municipal Railway	1,721.36	1,644.98	.....	$76.38
Municipal Railway Track Repair Work	2.47	1.65	.....	.82
Board of Public Works (Street Cleaning)	8,644.56	9,006.67	362.11	.....
Troughs	190.98	194.86	3.88	.....
Auxiliary Fire System	14,040.76	15,767.92	1,727.16	.....
Board of Public Works (Public Buildings)	40,342.65	36,934.35	.....	3,408.30
Dept. of Public Works (Street Work and Sewers)	305.59	291.05	.....	14.54
Fire Department	6,874.22	6,984.60	110.38	.....
Department of Public Health	30,575.11	28,915.61	.....	1,659.50
Department of Public Health	1,015.08	1,068.03	52.95	.....
Relief Home	18,654.13	16,288.90	.....	2,365.23
Exposition Auditorium	762.54	802.35	39.81	.....
Opera House and War Memorial Building	1,260.76	1,389.87	129.11	.....
Opera House and War Memorial Building	474.03	494.52	20.49	.....
Opera House and War Memorial Bldg. (Sprinkler)	37.04	44.03	6.99	.....
Purchaser of Supplies—City and County of San Francisco	15.68	14.90	.....	.78
Department of Electricity—General Alarm Station	171.10	195.19	24.09	.....
Museums:				
Memorial Museum—Station M, Golden Gate Park—Fulton and 10th Avenue	56.64	50.54	.....	6.10
Curator—Palace of Legion of Honor, Lincoln Park—Clement and 39th Avenue	378.46	287.66	.....	90.80
Municipal Airport	678.13	811.90	133.77	.....
Fire Boats	466.51	496.41	29.90	.....
Hassler Health Farm	2,848.57	2,822.34	.....	26.23
W.P.A. Projects	.....	5,013.40	5,013.40	.....
Totals	$421,262.39	$438,822.90	$25,209.19	$7,648.68

$17,560.51—Net Increase

TABLE No. 15-B

CHARGES OF PAYING MUNICIPAL ACCOUNTS

For the Fiscal Years 1936-1937 and 1937-1938

	1936-1937	1937-1938	Increase	Decrease
Libraries	$1,683.83	$1,787.87	$104.04	.....
Playgrounds	20,968.65	21,233.69	265.04	.....
Schools	37,340.12	39,189.61	1,849.49	.....
Totals	$59,992.60	$62,211.17	$2,218.57	.....

TABLE No. 16

METERS INSTALLED—SAN FRANCISCO DISTRICT

Revenue and Non-Revenue Producing as of June 30, 1938

Revenue Producing: Class of Consumers...	5/8"	3/4"	1"	1½"	2"	3"	4"	6"	8"	12"	Total
Commercial	20,747	928	1,657	1,832	2,188	12	30	133	99	1	27,627
Residential	86,336	102	547	225	12						87,222
Docks and Shipping	138	6	26	21	71	10				2	274
Total	107,221	1,036	2,230	2,078	2,271	22	30	133	99	3	115,123
Non-Revenue Producing:											
Commercial	1,178	24	32	25	50		2	2			1,313
Residential	972	1	7	4							984
Docks and Shipping					4						4
Total	2,150	25	39	29	54		2	2			2,301
Check Totals	109,371	1,061	2,269	2,107	2,325	22	32	135	99	3	117,424

NOTE: The above meter count includes 574 batteries composed of 1,551 meters.
The above meter count also includes 48 consolidations composed of 123 meters.
The above meter count also includes 257 automatic sprinklers for fire purposes.
Net metered connections 116,447.

Previous Records

	1933-34	1934-35	1935-36	1936-37	1937-38
Total Meters	114,914	115,881	114,482	116,606	117,424
Increase	473	967	1,399*	2,124	818
Idle Meters	6,137	4,987	3,823	3,246	2,301

TABLE No. 16-A

METERS INSTALLED—SUBURBAN DISTRICT

Revenue and Non-Revenue Producing as of June 30, 1938

Revenue Producing: Class of Consumers	5/8"	3/4"	1"	1½"	2"	3"	4"	6"	8"	Total
Under Regular Rates	400	19	35	23	157	3	6	2		645
Under Special Contracts	3			3	35					41
Total	403	19	35	26	192	3	6	2		686

*Decrease

Non-Producing:									
Under Regular Rates	29	2	1	2					34
Under Special Contracts	8	3	1	2	15		2	1	32
Total	37	5	2	4	15		2	1	66
Totals	440	24	37	30	207	3	8	2	1	752

NOTE: The above meter count includes 38 accounts composed of 164 meters (126 meters in excess of accounts).

Comparisons:	⅝"	¾"	1"	1½"	2"	3"	4"	6"	8"	Total
Record June 30, 1935										
Revenue Producing	364	24	34	24	151		5	2		604
Non-Producing	41	4	4	3	24		1			77
Total	405	28	38	27	175		6	2		681
Record June 30, 1936										
Revenue Producing	354	25	29	35	151	3	5	2		604
Non-Producing	31	4	4	2	26		1			68
Total	385	29	33	37	177	3	6	2		672
Record June 30, 1937										
Revenue Producing	389	24	35	32	165	3	4	2		654
Non-Producing	37	6	5	3	24		2		1	78
Total	426	30	40	35	189	3	6	2	1	732

TABLE No. 17

STREET MAIN TAPS AND SERVICE CONNECTIONS RECORD

San Francisco District—June 30, 1938

Taps on Street Mains

	Wharf	¾"	1"	1½"	2"	3"	4"	6"	8"	12"	Totals
June 30, 1937	244	126,379	3,101	2,777	1,995	568	252	200	94	2	135,612
Add 1937-38	...	1,939	59	26	16	17	7	10	11	1	2,086
June 30, 1938	244	128,318	3,160	2,803	2,011	585	259	210	105	3	137,698

SERVICE CONNECTIONS

Services connected to street mains, as above	137,698
ADD—"Distributors," being one or more add'l meters con. to serv. pipes	9,736
Total connections of record	147,434
DEDUCT—Disconnected services	30,987
Net live services, all metered, 115,123—active; tempy. S/O 2,301, less 977 extra meters in batteries	116,447

Previous Records	1934–35	1935–36	1936–37
Active	110,894	110,659	113,360
Shut-Off	4,987	3,823	3,246
Totals	115,881	114,482	116,606
Less extra battery meters	889	1,008	961
Net	114,992	113,474	115,645

SERVICE INSTALLATIONS
Fiscal Year 1937-38

District	Taps	Distributors	Total
Richmond District	157	12	169
Sunset District	865	12	877
North Market and Western Addition	178	91	269
South Market and Twin Peaks	886	79	965
Totals	2,086	194	2,280
Previous Years			
1934-35	510	217	727
1935-36	1,599	216	1,815
1936-37	2,098	223	2,321

AUTOMATIC SPRINKLER INSTALLATIONS
October 26, 1932, to June 30, 1938

Size	1932–35	1935–36	1936–37	1937–38	Total
4-inch	1	0	0	2	3
6-inch	25	4	6	8	43
8-inch	21	6	9	11	47
12-inch	0	0	2	0	2
Totals	47	10	17	21	95

TABLE No. 18

OFFICIAL METER TESTS
During Fiscal Year Ending June 30, 1938
Percentage of Variation

	0%	1%	2%	3%	4%	5%	6%	8%	10%	15%	Number Total	Tested Ratio
Fast	..	30	13	6	..	1	..	..	..	..	50	47.6%
Slow	..	14	5	..	3	1	..	..	1	..	24	22.9%
O.K.	31	..	..	..	..	..	..	..	..	..	31	29.5%
Total	31	44	18	6	3	2	..	..	1	..	105	100.0%
Previous Totals:												
Year 1934	25	24	21	11	3	2	1	..	..	..	87	
Year 1935	48	56	39	19	11	6	..	..	..	1	180	
Year 1936	78	74	37	17	3	..	1	1	..	..	211	
Year 1937	45	85	28	12	3	..	..	..	..	..	173	

Refunds account of over-registration—$16.89 (1938)
Increased account of under-registration—$32.12 (1938)

TABLE No. 19

RECORD OF BAD WATER COMPLAINTS

Comparisons of complaints received during the Fiscal Years 1934-35 to 1937-38, with reference to the reservoirs supplying.

	1934–35	1935–36	1936–37	1937–38
University Mound	267	248	182	240
College Hill	59	155	67	58
Lake Honda Reservoir	344	241	290	55*
Lake Honda-Ocean View	..	..	..	66*
Lake Honda-Lombard	..	..	..	27*
Forest Hill	6	7	7	2
Stanford Heights	70	65	62	89
Presidio Heights	39	24	32	54
Merced Manor	..	..	4†	..
Totals	785	740	644	591

*Not segregated in prior records—all shown as Lake Honda.
†Includes only two months' period.

TABLE No. 20

RECORD OF NO WATER COMPLAINTS

Fiscal Years 1934-35 to 1937-38

(a) Those for which the Department was responsible:				
Choked Pipes	241*	149	80	115
Service or main broken	30	39	37	36
Service or main too small	55	88	76	100
Elevation too high	64	32	15	13
S/O at main or meter	72	92	65	57
District tempy. S/D	23	87	22	14
Service or meter frozen	..	..	10	..
Totals	485	487	305	335
Percentage	48.2%	48.5%	32.3%	42.7%
(b) Those for which the Consumers were responsible:				
House Valves closed	192	189	145	116
House Pipe too small	41	35	86	54
False Reports	186	198	181	166
Valves out of order	86	64	76	83
House Pipe broken	9	17	24	14
Building too high	2	3	0	0
Overloaded Service	6	12	17	17
Housepipe frozen	..	..	111	..
Totals	522	518	640	450
Percentage	51.8%	51.5%	67.7%	57.3%
Total "No Water"	1,007	1,005	945	785

*A/c PWA work.

TABLE No. 21

RECORD OF BUILDING PERMITS
Issued by the Department of Public Works During the Fiscal Years 1934-35 to 1937-38

	1934–35	1935–36	1936–37	1937–38
Class "A"	$169,100	$551,822	$665,000	$40,000
Class "B"	291,350	377,000	1,974,375	649,600
Class "C"	376,505	666,988	1,339,529	1,247,450
Frames	1,930,830	6,593,777	9,523,668	8,087,721
Alterations	2,617,551	3,092,458	4,143,332	3,667,943
Public Buildings	3,310,294	1,535,608	206,110	1,289,639
U. S. Government	116,283	999,166	1,312,447	.....
State Buildings	1,261,109	222,448	289,316	287,115
Golden Gate Bridge	.....	126,100	.....	.....
1939 Exposition	.....	356,970	3,290,323	1,644,575
Bay Bridge	.....	.....	14,633	2,283,377
Totals	$10,973,022	$14,522,337	$22,758,733	$19,197,420

TABLE No. 22

NUMBER OF BUILDING PERMITS
Issued by the Department of Public Works During the Fiscal Years 1934-35 to 1937-38

Class "A"	26	6	9	1
Class "B"	11	9	20	12
Class "C"	56	115	111	89
Frames	513	1,449	2,068	1,760
Alterations	4,662	4,882	5,898	5,391
Public Buildings	27	32	13	15
U. S. Government	11	7	6	..
State Buildings	3	5	5	4
Golden Gate Bridge	..	1	..	..
1939 Exposition	..	1	8	19
Bay Bridge	..	..	1	1
Totals	5,309	6,507	8,139	7,292

TABLE No. 23

Number of Contractors' Jobs Handled by the Builders' and Contractors' Supply Section

Totals during the Fiscal Years	1934-35	807
	1935-36	1,717
	1936-37	2,764
	1937-38	2,476

TABLE No. 24

RETURNS AND EXPENSES—AGRICULTURAL DIVISION

RETURNS

	1933–34	1934–35	1935–36	1936–37	1937–38
Cash Rentals Accrued	$41,679.16	$55,192.44	$48,039.83	$39,760.69	*$44,138.19
Taxes Paid by Tenants	2,055.61	1,695.70	974.30	1,817.15	†2,514.22
Share Crop Rentals	10,347.65	7,312.58	8,639.97	9,426.48	6,080.96
Walnut Sales	23,365.83	18,078.86	26,862.23	27,385.40	24,534.52
Totals	$77,448.25	$82,279.58	$84,516.33	$78,389.72	$77,267.89

EXPENSES

General:	1933–34	1934–35	1935–36	1936–37	1937–38
Salaries	$9,963.62	$10,918.53	$10,390.80	$9,849.96	$10,975.77
Office and Miscellaneous	353.89	222.17	227.25	172.14	448.86
Automobile Service and Depreciation	1,266.02	1,071.54	865.65	1,007.00	1,117.07
Share Crops:					
Storage, Insurance, Handling, Freight	2,304.70	1,360.61	1,257.33	735.75	234.64
Care of Properties:					
Repairs—Buildings, fences, etc., weed and rodent control, remove stumps and trees	1,891.60	3,255.72	2,367.40	3,461.05	3,260.91
Boundary Surveys and Fencing:					
Surveys	2,088.87	406.27	3,006.67	.....	.....
New Construction	2,199.05	1,116.79	.....	.....	.....
Walnut Orchard					
Care of Orchard	5,510.66	5,668.57	6,901.20	5,443.37	5,674.78
Crop Harvest	4,263.25	4,254.66	6,054.09	5,676.18	5,469.13
Packing House and Selling Expense	6,135.48	4,807.16	4,639.24	4,332.49	3,459.61
Totals	$35,977.14	$33,082.02	$35,709.63	$30,677.94	$30,640.77

*Includes Rental due from Crystal Springs Country Club.
†Includes Taxes due from Crystal Springs Country Club.

ORGANIZATION AND PERSONNEL

N. A. ECKART.....General Manager and Chief Engineer

WATER PRODUCTION AND ENGINEERING

T. W. Espy.....Engineer of Water Production
I. E. Flaa.....Hydraulic Engineer
C. A. Lauenstein.....Assistant Hydraulic Engineer
A. W. Ebright.....Superintendent Alameda Division
W. R. Anderson.....Assistant Superintendent Alameda Division
G. J. Davis.....Superintendent Peninsula Division
S. M. Millard.....Assistant Superintendent Peninsula Division
G. E. Fanning.....Photographer

CITY DISTRIBUTION

G. W. Pracy.....Superintendent City Distribution
O. G. Goldman.....Assistant Superintendent City Distribution
J. J. Miley.....General Foreman City Pipe System
Joseph Kappeler.....General Foreman Services and Meters
Thomas Mayhew.....Storekeeper
R. W. Tullis.....Foreman Machine Shop

WATER PURIFICATION

G. E. Arnold.....Chief Water Purification Engineer
F. E. De Martini.....Assistant Water Purification Engineer
K. Fraschina.....Assistant Water Purification Engineer

WATER SALES

V. E. Perry.....Manager Water Sales Division
A. M. Cooley.....Assistant Manager Water Sales Division
W. D. Ryder.....Supervisor Consumers' Accounts
J. E. Huntoon.....Assistant Supervisor Consumers' Accounts
A. W. Till.....Supervisor of Collections
F. S. Hobro.....Assistant Supervisor of Collections
R. P. Scott.....Chief Clerk
J. C. Joost.....Supervisor Docks and Shipping
C. C. Young.....Chief Meter Inspector
Joseph Conway.....Consumers' Complaint Investigator

LANDS AND AGRICULTURE

F. W. Roeding.....Superintendent Agricultural Division
F. Peters.....Assistant Superintendent Agricultural Division

ACCOUNTS

J. J. Sharon.....Auditor
E. J. White.....Assistant Auditor
H. J. Pachtner.....Senior Bookkeeper
H. M. Kinsey.....Cashier

RETIRED—1937–1938

During the past fiscal year the following employees were retired from service, and recognition is given on account of their faithful service in the organization:

A. W. Ebright—Superintendent Alameda Division.....51 Years' Service
John E. Maisch—Meter Inspector.....51 Years' Service
Mrs. Hattie B. Holmes—General Clerk.....28 Years' Service
Mrs. G. E. McDonald—House Mother.....14 Years' Service
Emil E. Hoff—Inspector.....10 Years' Service

GOLDEN GATE INTERNATIONAL EXPOSITION
Constructed on man-made island in San Francisco Bay. "Treasure Island" will be used for an airport under jurisdiction of Public Utilities Commission after Fair closes.

HETCH HETCHY WATER SUPPLY

BUREAU OF ENGINEERING

L. T. McAFEE
Utilities Engineer

L. T. McAFEE
Chief Engineer and Manager Hetch Hetchy Water Supply

Completion of the enlargement of O'Shaughnessy Dam at the close of the fiscal year 1937-1938 was the most important event of the year in the construction and operation of the Hetch Hetchy Water Supply System. With the increased storage of water possible with the higher dam, sufficient water is made available to insure the uninterrupted supply of water for many years, in any required quantities, to San Francisco and to the increasing number of neighboring communities to which San Francisco is now furnishing or will in future furnish water, and to provide for operation of the Moccasin Power Plant at full capacity throughout each year and hence increase the revenue to the City from such operation. During the year the contractor finished pouring the mass concrete in the dam, grouted the original dam and the new addition, and constructed or installed numerous appurtenances; removed his equipment, repaired roads damaged by his operations, and cleaned up the camp and plant areas. Acceptance of the contract work was made as of July 1, 1938.

The amount of Hetch Hetchy water supplied during the fiscal year to the local system was 1,358,500,000 gallons, bringing the total since the beginning of operation of the Hetch Hetchy aqueduct (October 28, 1934) to 37,360,800,000 gallons. In the spring of 1938 delivery of water was discontinued, as all local reservoirs had been well replenished by bringing in large quantities of Hetch Hetchy water in previous years, and the runoff resulting from the heavy rainfall of the winter of 1937-1938 filled them to overflowing.

Steel liner plates were installed in the invert of the Moccasin Reservoir bypass conduit, to protect the concrete against erosion. Nine cottages were constructed at Moccasin and Priest to provide additional housing for permanent employees and their families, and roads were constructed or improved. The extended and severe storms of the year necessitated an unusual amount of maintenance and repair work, chiefly on roads and on canals.

Construction for the Water Department, under the supervision of the Hetch Hetchy Water Supply Department, of the section of Crystal Springs pipe line No. 2 from Crystal Springs Dam to Burlingame, was completed, and that of the

Palo Alto pipe line, from the Redwood City valve house of the Hetch Hetchy Aqueduct to Palo Alto, commenced during the year, is more than 90 per cent complete.

At San Francisco Airport, the Administration Building, constructed in the previous fiscal year, was put into service. Contracts were completed during the fiscal year for finishing certain rooms of this building which were left unfinished under the general contract for the building pending determination of the needs of tenants. Work was begun on an elaborate and extensive program for major improvements and extensions to the landplane port, and for the construction of a seaplane port, financed with a bond issue of $2,850,000, voted by the people of San Francisco, and with a new allotment of Federal Works Progress Administration (WPA) funds. Considerable work was done under earlier financing on levee and field fill construction and on a WPA project for major improvement to runways and other work.

The work on Yerba Buena Shoals (Treasure Island) under Public Works Administration Docket No. 1427, on construction of buildings and other facilities for airport and exposition purposes, which was supervised by the Bureau of Engineering, was completed June 30, 1938.

Organization and Personnel:

The Hetch Hetchy Water Supply department is in charge of L. T. McAfee, Utilities Engineer, assisted by L. W. Stocker, Chief Civil Engineer. Electrical engineering work is done in consultation with, or under direction of, Paul J. Ost, Manager and Chief Engineer, Electric Power Bureau. C. L. Cook, engineering chemist, Department of Public Works, acts as concrete technologist, as consultant on materials, and as engineer of tests of materials. Accounting is in charge of George S. Warren, Senior Accountant.

Headquarters engineering and administrative work for the Hetch Hetchy Water Supply, as well as for all other constructing and operating departments of the Public Utilities Commission except the Water Department, is done by the Bureau of Engineering of the Public Utilities Commission, an organization of civil, structural, mechanical and electrical engineers with necessary technical assistants and clerical force, all under the general supervision of Messrs. McAfee, Stocker and Ost, above mentioned.

Field engineering and inspection also are performed by the Hetch Hetchy Water Supply department field staff, the construction work in each vicinity being supervised by a construction engineer reporting to the headquarters office, with assistants as necessary.

When so authorized or directed, and provided with funds for the purpose, the Bureau of Engineering and the field staff perform engineering work for other departments.

Publicity and Visitors:

The department collaborates with the Bureau of Public Relations in preparation of literature and lectures describing the water supply system and related work.

Many trips are made over the work by outside engineers, by public bodies, and by visiting officials from other cities, states and countries. These parties are always given every assistance, and when necessary are accompanied by engineers from this office.

O'SHAUGHNESSY DAM COTTAGE
This cottage, overlooking Hetch Hetchy Reservoir, is for use of engineers and other executives inspecting Dam.

Relations with U. S. Department of the Interior:

The Raker Act, granting to the City certain rights of way and lands in Yosemite National Park, Stanislaus National Forest, and other public lands, requires that after the expiration of five years from the passage of the act the City pay to the United States on the first day of July of each year $15,000 annually for the first ten years, $20,000 annually for the next ten years, and $30,000 annually thereafter. The payment for 1938 was the last of the $20,000 payments, making a total of $350,000 paid on this account to July 1, 1938.

The engineers of the Hetch Hetchy water and power systems have frequently conferred with the superintendent and other officials of Yosemite National Park on matters affecting the mutual interests of the City and the Park Service. Relations have been cordial, both parties cooperating to work out satisfactory solutions of the problems presented.

Relations with the Department of the Interior during the fiscal year in reference to the disposal of power under the Raker Act are described in the Electric Power Bureau section of this report.

Hydrography:

Rainfall and stream flow for the season 1937-1938 were very much above normal. December rains produced the highest rate of stream flow of record on the Tuolumne River. The maximum rates of flow were: into Hetch Hetchy Reservoir

about 50,000 cubic feet per second; and into the Don Pedro Reservoir about 75,000 cubic feet per second. The waters of this tremendous flood were entirely intercepted by the City's Lake Eleanor and Hetch Hetchy reservoirs, and the Don Pedro Reservoir of the Turlock and Modesto Irrigation districts. Without these reservoirs on the Tuolumne watershed, the flood flow to the San Joaquin Valley would probably have been in excess of 100,000 cubic feet per second. A flood of such proportions would have caused enormous damage to the lower San Joaquin Valley farming lands.

The previous highest rate of flow of the Tuolumne River occurred on January 31, 1911, when the flow reached 60,300 cubic feet per second at La Grange. The stream flow season does not end until September 30, and therefore the detailed records for the current stream-flow year are not available for this report.

On the basis of systematic snow surveys, the State Division of Water Resources, in cooperation with the City and County of San Francisco, the Yosemite National Park, and the Turlock and Modesto Irrigation districts, makes estimates of the amount of runoff to be expected from the accumulated snow on the upper Tuolumne River watershed. The surveys (generally three each season) are made in March, April and May. Predictions of stream flow based on these snow surveys as now conducted have attained a high degree of accuracy and the advance information thus gained is of great value in the manipulation of the City's and the Irrigation Districts' reservoirs.

Below are given for 1937 the amounts of runoff predicted and the amounts subsequently actually measured, and the predictions for 1938:

	1937 April to July, Incl. Acre Feet Runoff		1938 April to July, Incl. Acre Feet Runoff
	Predicted	Measured	Predicted
Tuolumne River at Hetch Hetchy..	816,000	696,634	850,000
Tuolumne River at La Grange.....	1,636,000	1,420,269	1,800,000

The precipitation for the season 1937-38, and the Tuolumne River discharge or runoff for the seasonal year 1936-37, at the stations named below, were as follows:

PRECIPITATION

	Hetch Hetchy		Lake Eleanor		Moccasin	
	1937-38 Season	1910-38 Average	1937-38 Season	1910-38 Average	1937-38 Season	1925-38 Average
July	0.37	0.20	0.25	0.12	.00	0.01
August	0.00	0.12	0.00	0.15	.00	0.01
September	0.00	0.66	0.00	0.71	.00	0.15
October	1.21	1.73	1.29	1.83	.89	1.16
November	2.47	2.66	4.17	3.24	1.76	2.23
December	10.44	4.61	13.19	6.07	5.54	4.07
January	5.79	5.96	8.06	7.97	7.64	4.70
February	10.43	6.03	16.25	8.02	13.02	5.92
March	12.74	4.79	14.43	5.66	9.30	3.95
April	5.61	3.21	5.44	3.60	2.91	2.47
May	1.39	1.83	0.91	1.82	0.13	0.62
June	1.57	0.84	0.62	0.80	0.03	0.32
Total	55.62	32.64	64.61	39.99	41.22	25.61

TUOLUMNE RIVER DISCHARGE

Season 1936-37 in Acre Feet

Month	Hetch Hetchy	Lake Eleanor	Cherry Creek	La Grange
October	2,900	300	700	4,300
November	3,300	160	600	8,600
December	6,200	4,800	6,300	27,300
January	7,000	3,500	3,400	31,400
February	37,200	17,600	23,200	273,900
March	34,200	15,100	13,400	209,500
April	75,200	33,900	35,700	295,600
May	323,200	71,100	110,200	633,900
June	239,700	26,800	68,900	399,400
July	58,500	4,200	7,400	91,400
August	7,400	600	500	16,900
September	2,100	800	300	4,800
Total	796,900	178,860	270,600	1,997,000

The amount of water diverted from the Tuolumne River for San Francisco during the fiscal year is shown in the following table:

1937	Million Gallons	1938	Million Gallons
July	179.5	January	64.1
August	233.7	February	127.0
September	231.0	March	0.0
October	236.0	April	0.0
November	229.2	May	0.0
December	58.0	June	0.0
			1,358.5
Diverted prior to July, 1937			36,002.3
Total diversion to San Francisco since beginning of operation of Hetch Hetchy Aqueduct			37,360.8

At the end of the fiscal year the amount of water stored in Calaveras and Peninsular reservoirs of the Water Department is 50.3 billion gallons; in Hetch Hetchy and Lake Eleanor 122.1 billion gallons. At the present rate of supply to consumers, plus allowance for evaporation, the grand total in storage, 172.4 billion gallons, would be sufficient to last seven years if no more water whatever flowed into the lakes during that time.

The City's defense against suits filed by various riparian owners has necessitated the systematic measurement and compilation of records of stream flow at several stations on the San Joaquin, Tuolumne, and Stanislaus Rivers in the lower San Joaquin Valley. Salinity tests of the San Joaquin River water are also made.

The ground water elevation is observed at intervals of about a month in a series of about 100 wells located in the vicinity of the stream channels. A record is kept of the amounts of water pumped from the rivers and used for irrigation by the various districts and individuals.

During construction of the aqueduct tunnels many springs and wells adjacent to the tunnels suffered a diminution of flow and some even ceased to flow. Numerous claims for damages were made against the City, and some suits were brought. Anticipating such claims, the department many years ago adopted the practice of locating, by survey, all springs and wells that could be found in a zone through which a tunnel was to be driven, and measuring the flow or yield of each several times annually. The information thus accumulated has enabled the engineer to

compare the conditions existing before, during, and after tunnel construction, and to study the relation of flow to rainfall and other weather conditions. From such studies, and from geological investigation, a determination of the merit of each damage claim is made. In some cases the City has accepted responsibility, but in most cases where diminution or disappearance of flow has actually occurred it is believed to be the result of natural conditions. Many of the claims were presented during the "dry cycle" when rainfall was below normal for several years. The last two or three winters of normal rainfall have brought many of these springs back to a flow as good as, and sometimes better than, when first observed. Pending adjudication, all records of flow are being kept up to date by continuance of the observation above mentioned.

The San Joaquin River was at high flood stage early in February, 1938, to the end of the fiscal year. The lowlands were continuously under water during that time, and levees were broken and farm lands flooded. The principal areas flooded in the vicinity of the Hetch Hetchy Aqueduct were:

El Solyo Ranch	About 500 acres
Elliott Ranch	About 2,000 acres
River Delta Farms	About 3,000 acres
Vicinity of Paradise Slough	About 5,000 acres

Water Litigation:

As stated in the report of last year, the City is defendant in a number of lawsuits involving the determination of riparian rights. The status of the cases in the most advanced state is shown below:

Meridian, Ltd. (El Solyo Ranch). The judgment entered on June 18, 1936, was unsatisfactory to both plaintiff and defendant, and both appealed to the State Supreme Court. The case was heard in this court in July, 1937, and a judgment is expected in the near future.

Modesto, Turlock and Waterford Irrigation Districts. During the year, much progress has been made toward the settlement out of court of matters concerning water rights and the use of water. Final agreement depends partly upon the decision of the State Supreme Court in the case of Meridian, Ltd., vs. the City, and the Modesto, Turlock and Waterford Irrigation Districts.

Dan E. Williams, et al. A judgment in favor of the City was rendered by the Superior Court. The plaintiff appealed this decision, and the Appellate Court in Sacramento reversed the decision of the lower court, referring the case back to the lower court for retrial. A petition by the City for rehearing in the Appellate Court was denied, as was also a petition by the City for hearing in the State Supreme Court.

Hetch Hetchy Railroad:

The Sierra Railroad continued operation of the Hetch Hetchy Railroad, providing all necessary labor and equipment and maintaining the track and structures, all as provided for in the agreement of June 1, 1934, between the operating railroad and the Public Utilities Commission.

In May, 1938, with construction work at O'Shaughnessy Dam practically completed and the contractor's heavy equipment hauled out, the volume of freight to be handled by rail became too small to justify the expense of steam locomotive

FLOODED AGRICULTURAL LAND, SAN JOAQUIN VALLEY
View taken June 17, 1938, of El Solyo Ranch, Stanislaus County, showing flooded area. Increased storage capacity of Hetch Hetchy Reservoir prevented worse floods in Tuolumne and San Joaquin River areas.

operation, and the incidental expense of burning grass and weeds on the right of way as required by the State Fire Warden each summer where steam locomotives are used. The use of steam was therefore discontinued and gasoline locomotives were used for the remaining haulage, which was mostly of outbound light construction equipment from O'Shaughnessy Dam.

During the winter, heavy rainfall and snowfall caused a great amount of interference with movement of freight to and from O'Shaughnessy Dam. Numerous track washouts delayed the transportation of freight and required considerable maintenance work.

In May, 1938, an inspection of the track and structures was made to determine the amount of maintenance and repair work to be performed by the Sierra Railroad prior to termination of the operating agreement This repair work is now in progress.

Watersheds and Impounding Reservoirs:

Two of the City's reservoirs impound water collected on the granite watersheds of the Sierra Nevada. The principal reservoir, Hetch Hetchy, was created by the construction of O'Shaughnessy Dam on Tuolumne River and occupies what was formerly known as Hetch Hetchy Valley. It has a tributary area of 459 square miles of rugged mountains, the greater part of which is rarely visited by people. Lake Eleanor, the smaller reservoir, lies on Eleanor Creek, a tributary of Cherry

River, which in turn flows into Tuolumne River. The lake has a watershed area of 79 square miles, and as no roads traverse this area, visitors are rare. Both reservoirs lie within Yosemite National Park. Between the reservoirs and the intake of the aqueduct there is an additional watershed area of 38 square miles.

These reservoirs assure San Francisco an ample supply of water for domestic, industrial and municipal purposes for many years to come. Incidentally, the water released from these reservoirs provides San Francisco with a substantial cash income from the sale of hydro-electric power generated at Moccasin Power House.

The reservoirs (principally Hetch Hetchy) have proven a distinct benefit to land owners along the lower Tuolumne and San Joaquin Rivers, by regulating the flow of the Tuolumne River and retaining flood flows from winter rains and melting snow until the peak of the flood in the valleys has past. Records of high rates of inflow into Hetch Hetchy reservoir during this fiscal year, and the temporary detention of these waters in the reservoir, while at the same time the lower San Joaquin Valley was suffering a flood, demonstrated this benefit.

A reservoir keeper and an assistant are employed at O'Shaughnessy Dam.

The usual maintenance work required of the operating force in connection with Hetch Hetchy reservoir was considerably reduced during the year as the contractor for the enlargement of O'Shaughnessy Dam did much of this work as a normal routine part of the work under his contract.

Operation at Lake Eleanor is in charge of a reservoir keeper who lives at Eleanor Dam. During the summer he is assisted by a maintenance crew in clearing the reservoir of logs, repairing roads, and in other maintenance work.

Quarters at O'Shaughnessy Dam Camp:

During the fiscal year three existing cottages at O'Shaughnessy Dam were reconditioned and improved under an order for extra work under Contract No. 149, by the Transbay Construction Company, contractor for the enlargement of O'Shaughnessy Dam. The work consisted of reroofing, reconstruction of porches, removal of existing partitions and construction of new partitions, furnishing and installing new fixtures, and other work necessary to suit the cottages to be maintained permanently in use as units of the permanent camp. This work was necessary to provide better for accommodations for persons having business requiring their presence at the dam, and to satisfy the requirement of the Yosemite National Park Service that the exterior of the buildings be altered to harmonize with the surroundings.

Rehabilitation and improvement work was done by the same contractor on other features in the vicinity of the dam. Roads and trails were repaired, small buildings, sheds, footbridges, fences, and other features were repaired and painted, the water supply and electric power facilities used during construction were altered to adapt them for permanent camp use, and other work was done as necessary to put the camp in condition for permanent occupancy by the operating force, and for accommodation of visitors. Part of this work was done under orders for extra work under Contract No. 149, and part under the original requirements of the contract.

The camp at O'Shaughnessy Dam, when vacated by the contractor at the close of work under Contract No. 149, met the full approval of the Superintendent of Yosemite National Park.

UPSTREAM FACE, O'SHAUGHNESSY DAM
View south from north bank showing dam under construction, spillway structure, cement mixer and aggregate bin.

Under Contract No. 173, a new five-room cottage was constructed at O'Shaughnessy Dam by L. Ubels, contractor. This was completed March 31, 1938. It is of wood frame construction, with wood interior and exterior finish above the foundations, the exposed parts of which are of stone masonry and the remainder of concrete. Stone masonry exterior pilasters and stone masonry fireplace were used in the manner common in the standards of the National Park Service, after which the exterior finish was patterned. The cottage is built on a view point overlooking the dam and reservoir, and presents a very pleasing appearance.

Quarters at Lake Eleanor:

At Lake Eleanor Dam a 1 kw. hydro-electric generator was installed by the City's force, to provide light and power for domestic and miscellaneous minor uses at this location.

Plans are under consideration for a new cottage to be constructed at Lake Eleanor Dam, to replace the existing cottage and provide better housing for the reservoir keeper and his family, whose present quarters, built at the time of construction of the dam, have depreciated to such extent that early replacement is necessary. On May 26, 1938, an application was filed with the Federal Emergency Administration of Public Works for aid in financing this work under the 1938 PWA program. At the end of the fiscal year, this application had not yet been approved by the Federal authorities. Work in connection with this cottage awaits such approval.

O'Shaughnessy Dam:

At the close of the fiscal year, all work on the enlargement of O'Shaughnessy Dam by the Transbay Construction Company under Contract No. 149 was completed. Official acceptance of this work was made as of July 2, 1938.

Completion of this contract brought to a realization the original plan of the late M. M. O'Shaughnessy to increase the height of this dam when conditions warranted the expenditure for this work. Federal aid in financing this project under the Public Works Administration made possible the early realization of this plan. The enlarged dam now stands 312 feet above river bed and creates a storage capacity of 117,300,000,000 gallons in Hetch Hetchy Reservoir, about 70% more than held by the reservoir prior to the enlargement of the dam.

The last pour of mass concrete in the dam proper was made on the morning of October 11, 1937, and in the spillway section of the dam on October 28, 1937, bringing to a total of 274,686 cubic yards the concrete placed in the new section of the dam and in the new spillway structure, exclusive of the minor items mentioned below. Of this amount, 56,786 cubic yards of concrete were poured during the fiscal year 1937-1938.

With the main structure finished, the following work was carried to completion: construction of curbings and balustrades on the crest of the dam; placing precast stairways on the downstream face of the dam; the building of two valve houses; construction of an operating room on the upstream face of the dam; installation of a lighting system throughout the dam; finishing surfaces of the dam; repairing and paving roads; remodeling permanent cottages; grouting the contraction joints; removing all the construction equipment; dismantling the cookhouse, warehouse, bunkhouses and residences; and cleaning up the campsite according to regulations of the National Park Service.

A total of 1,107 cubic yards of concrete were used in the appurtenant concrete structures, such as valve houses, railings, stairs, etc., mentioned above. Of this amount, 981 cubic yards were placed during the past fiscal year.

The stairways, including platforms on the downstream face of the dam, were precast in the area excavated for the spillway. When cured, they were removed from the forms and put in place on the dam by means of the high-line. After installation, steel handrails were installed. These stairs extend from the crest of the dam 212 feet to the house for the three 36-inch needle valves.

The curbing on the dam was poured in sections, between contraction joints, corresponding to the blocks in the mass concrete of the dam. While this curbing was being constructed, concrete posts and railings were precast in another location. When completed, they were carried by truck to the dam and placed into fittings embedded in the curbing. The finished job involved over 1,800 feet of railing along the crest of the dam and on the bridge over the spillway section.

Two valve houses and a valve operating room were also constructed during this year. The operating room was built on the upstream face and as an integral part of the main dam. This room houses the electric switchboards and pressure pumps used for operating other equipment on the dam. One valve house was built on the downstream face at an elevation of about 3,750 feet. It houses a 72-inch needle valve and a 72-inch butterfly valve, both of which were installed during the fiscal year. These valves are manually operated by controls situated directly above them. The needle valve, one of the largest in the State, has a capacity of 1,200 cubic feet of water per second. The second valve house is 212 feet below the crest

O'SHAUGHNESSY DAM AUGUST 24, 1937
View from south abutment shows enlarging of Dam in progress. Structure on left is increased to full height. Block method of construction shown on right.

of the dam at an elevation of 3,600 feet. It houses the three 36-inch needle valves and controls moved from the face of the original dam and reinstalled on the face of the enlarged dam.

The quantity of concrete for the buildings, railings, etc., was estimated in advance, so that sufficient sand and coarse aggregates could be stored in stock piles, thus permitting starting the work of dismantling the tram line which brought the sand from Miguel Meadow, the conveyor belt which brought the rock from the quarry, the crushers and the screening plant on September 24, 1937, well in advance of completion of all concrete work.

Miguel Meadow is situated about 8 miles by road from O'Shaughnessy Dam in the direction of Lake Eleanor, at an elevation of about 5,500 feet. A gravity aerial tram line was erected over the side of the mountain directly to the meadow, and the aerial route was only 3 miles. At Miguel Meadow the 1¼-yard buckets on this line were filled with sand dredged out from beneath the original surface of the meadow, and were run on an endless cable to the screening plant at Hetch Hetchy, which was at about 4,000 feet elevation. The weight of the loaded buckets was sufficient to operate the entire system, due to the difference of 1,500 feet in elevation. When sufficient sand had been taken, all equipment was removed and the grounds at Miguel Meadow cleaned and landscaped to conform with the natural beauty of the Park. As a result of the dredging of sand, an artificial lake about 27 feet in maximum depth has been created. This lake now remains as a per-

manent beauty spot, without evidence of its artificial origin, and is a lure to hikers in the vicinity.

The suspended conveyor belt which covered a span of 1,800 feet was used to bring rock from the quarry to the screening plant. This belt was removed as were the primary crushers used at the quarry. After removal of the equipment, the quarry was landscaped so that it would not blemish the beauty of the Park. Care was used in the quarrying of the rock, and material was removed in a manner which left the quarry nearly undetectable to visitors at the dam.

The contractor's screening plant was situated on top of a knoll above the south abutment of the dam. This plant was dismantled, the ground was leveled, and the approach road was improved, to provide a parking area accessible by automobile, overlooking the dam and the reservoir. Collaboration of both the Park and Public Utilities Commission engineers made it possible to turn this otherwise useless area into an observation point for the benefit of visitors to the dam.

Cooling of the concrete by circulating water through the cooling system was completed to the required extent December 24, 1937. This artificial cooling of the concrete, to remove the heat generated chemically in course of setting of the cement, was resorted to, as in the case of Boulder Dam, so that the shrinkage of the concrete, and the resulting opening of joints between adjacent masses of concrete, would be completed within two months after the pouring of the concrete, and in proper condition for final grouting to be done during the construction period. Cooling was accomplished by circulating water through a system of coils embedded in the concrete, which required a total length of 78 miles of steel tubing. As water taken directly from the reservoir was not cold enough to bring the concrete down to the required final temperature, the contract required the installation and operation of a refrigerating plant to cool water nearly to the freezing point. Under the terms of the contract this plant remained property of the contractor, and on completion of the cooling it was dismantled and shipped out. The cooling pipe connections on the downstream face of the dam were removed, after which the recesses for pipe outlets were filled with concrete. The downstream face of the dam was sand-blasted and cleaned after these recesses and similar recesses for grouting connections were filled.

Grouting operations, including the sealing of the contraction joints in the original structure as well as those in the addition, demanded expert supervision. All joints in the original dam were calked with lead; and the calking was tested by forcing water into the joints under pressure. The joints between the concrete blocks in the addition to the dam and between the addition and the old dam were grouted through a system of grout pipes embedded in the concrete. After satisfactory water pressure tests in each seam to be grouted had been made, and water held in the joints long enough to saturate the concrete immediately adjacent, a rich mixture of cement and water was slowly pumped into the joint, and held under pressure until the cement had had time to take a firm set. The order in which the joints were to be grouted, and the pressures to be used in the various joints, had been worked out in advance so that on completion of grouting the distribution of stress through the entire structure, old and new sections combined, should be practically the same as if the whole dam had been built in one operation, and so as to develop as fully as possible the advantages of the arched form of the dam.

The two large bunkhouses, the cookhouse, camp hospital, warehouse, offices, and residences, used by the contractor's force were dismantled. Likewise, septic tanks and the incinerator used during the construction period were removed. After the removal of the buildings, the grounds were landscaped to the satisfac-

O'SHAUGHNESSY DAM SPILLWAY UNDER CONSTRUCTION
View taken August 24, 1937, shows pouring of concrete for spillway structure located at south crest of heightened O'Shaughnessy Dam.

tion of the National Park Service. Even now, only a short time after completion of the work, it is difficult to realize when viewing the vicinity that there were accommodations for more than 400 people and a construction plant for work of this magnitude at Hetch Hetchy.

All permanent buildings were repainted during the fiscal year.

During the winter of 1937-38, the dam proved its usefulness for ameliorating flood conditions in the lower reaches of the Tuolumne River, as noted in the section on hydrography, earlier in this report.

Construction work at O'Shaughnessy Dam is supervised by John H. Ryan, Construction Engineer.

California law provides for the supervision of dams by the State Department of Public Works through the State Engineer for the purpose of safeguarding life and property. Before bids for the enlargement of O'Shaughnessy Dam were advertised for, the plans and specifications were submitted to the State Engineer, whose office approved them after making a detailed check of the design, which had previously been reviewed by the United States Bureau of Reclamation acting as consultant to the Public Utilities Commission. Frequent inspections of the construction work were made by representatives of the State Engineer, and on completion an order authorizing the use of the dam was issued by him. Mr. George W. Hawley, Deputy State Engineer in charge of dams, and his staff in both office and field, were uniformly prompt, painstaking and thorough in their consideration of matters submitted and in their inspections.

The final total quantities of work done under the 88 items of Contract No. 149 are shown on the table following:

CONTRACT No. 149—ENLARGEMENT OF O'SHAUGHNESSY DAM

Final Estimate of Work Done Under Contract Items

No.	Item	Total Quantity	
1.	Clearing reservoir site	394	Acres
2.	Excavation for dam foundation; all classes	84,066	Cu. Yds.
3.	Excavation for spillway; all classes	30,732	Cu. Yds.
4.	Excavation for roads and Misc. Excavation—common	9,088	Cu. Yds.
5.	Excavation for roads and Misc. Excavation; solid rock	17,409	Cu. Yds.
5A.	Tunnel Excavation	4,561.61	Cu. Yds.
8.	Excavation of concrete from existing dam	425	Cu. Yds.
9.	Roughening surfaces of existing dam	73,032	Sq. Ft.
10.	Roughening surfaces of Siphon Spillway, etc	57,680	Sq. Ft.
11.	Removal of concrete structures	270	Cu. Yds.
12.	Drilling grout holes in the foundations for dam and spillway, not over 30 feet deep	1,182	Lin. Ft.
16.	Drilling grout holes in the existing dam, from faces of dam	83	Lin. Ft.
17.	Drilling grout holes in the existing dam, from galleries in the dam	776	Lin. Ft.
18.	Drilling grout holes in the existing dam, from inspection wells in the dam	216	Lin. Ft.
19.	Drilling holes for anchor bars and grouting bars	26,521	Lin. Ft.
20.	Calking joints in concrete	5,214	Lin. Ft.
21.	Making connections to grout pipes in foundation for dam and spillway	138	
22.	Making connections to grout pipes in galleries in existing dam	38	
23.	Making connections to grout pipes in inspection wells in the dam	36	
24.	Pressure grouting	4,552	Cu. Ft.
25.	Mass concrete in dam	204,951	Cu. Yds.
26.	Concrete to form impervious surfaces in dam	45,390	Cu. Yds.
27.	Concrete in slots in dam	13,748	Cu. Yds.
28.	Concrete for plugging siphon spillways	3,444	Cu. Yds.
29.	Concrete in spillway bridge and spillway weir	7,104	Cu. Yds.
30.	Concrete in valve houses, screen-rack and walls and beams adjacent to valve block	821	Cu. Yds.
32.	Concrete railings	168	Cu. Yds.
33.	Concrete precast stairways on downstream face of dam	48	Cu. Yds.
34.	Concrete for spillway lining	70	Cu. Yds.
37.	Precast porous concrete blocks	49	Cu. Yds.
38.	Drainage holes through masonry	807	Lin. Ft.
40.	Portland cement	291,317	Bbls.
41.	Reinforcing steel	759,890	Lbs.
42.	Anchor bars	465,461	Lbs.
43.	Rubble masonry	590	Cu. Yds.
44.	Masonry guard rails	137	Cu. Yds.
46A.	Furnishing and placing ½" metal tubing	1,636	Lin. Ft.
47.	Furnishing and placing 1" wrought steel pipe	371	Lin. Ft.
47A.	Furnishing and placing 1" metal tubing	384,858	Lin. Ft.
48.	Furnishing and placing 1½" wrought steel pipe	6,397	Lin. Ft.
48A.	Furnishing and placing 1½" metal tubing	25,514	Lin. Ft.
49.	Furnishing and placing 2" wrought steel pipe	493	Lin. Ft.
50.	Furnishing and placing wrought steel pipe larger than 2" pipe and not larger than 8" pipe	96,059	Lbs.
51.	Furnishing and placing pipe fittings for all wrought steel pipe not larger than 8" pipe	10,003	Lbs.
52.	Furnishing and placing metal tubing fittings for tubing not larger than 1½"	33,170	Lbs.
53.	Furnishing and placing 1" gate valves	386	
53A.	Furnishing and placing 1½" gate valves	98	
53B.	Furnishing and placing 2" gate valves	76	
54.	Furnishing and placing valves larger than 2" and not larger than 8"	2,761	Lbs.
54A.	Removing and reinstalling pipe and fittings	9.188	Lbs.
55.	Connections from headers to cooler coils	2,179	
56.	Grout pipe outlets	6,263	
57.	Furnishing and installing electric metal conduit	2,609	Lbs.
58.	Galvanized pipe hand railing	15,848	Lbs.
59.	Copper water stops	21,853	Lbs.
60.	Sheet metal grout stops	51,099	Lbs.
61.	Corrugated metal drains	40,814	Lbs.
62.	Stairs, ladders and gratings	84,500	Lbs.
63.	Miscellaneous steel work	1,140	Lbs.
64.	Cast Iron gratings and frames	339	Lbs.
65.	Miscellaneous brass and bronze	1,857	Lbs.
66.	Galvanizing	72,446	Lbs.
67.	Removing miscellaneous equipment from existing dam and installing it in new locations	8,596	Lbs.
68.	Removing water stage recorder from present location and installing it in new location	100%	
69.	Removing accumulators and frames, etc	100%	
70.	Removing and reinstalling three 36" valves	100%	
71.	Installing steel pipes connecting with valves	105,368	Lbs.
72.	Installing outlet valves furnished by City	101,068	Lbs.

No.	Item	Total Quantity	
73.	Installing fixed supports, pier plates, etc.	37,914	Lbs.
75.	Installing flanged pipe and fittings for spillway gate control	31,932	Lbs.
76.	Installing control mechanism and other parts of the spillway gate control system, not included in Item 75	8,195	Lbs.
77.	Installing miscellaneous metal work furnished by City	3,292	Lbs.
81.	Crusher run base	1,190	Cu. Yds.
82.	Emulsified asphalt	15,270	Gals.
83.	Base rock	264	Cu. Yds.
84.	Screenings	170	Cu. Yds.
85.	Corrugated metal pipe culverts	1,520	Lbs.
86.	6" drain tile	980	Lin. Ft.
87.	Furnishing and installing cooling plant	100%	
88.	Operating the refrigerating plant	10,754	Hrs.

Lower Cherry Aqueduct:

Water from Lake Eleanor flows down Eleanor Creek and Cherry River to Cherry River Diversion Dam, where it enters the Cherry River Aqueduct. This aqueduct, with capacity of 200 cubic feet per second, consisting of tunnel, concrete lined canal, steel pipe, and a short section of woodstave pipe, extends 3.15 miles to the concrete forebay above Early Intake Power House. A 60-inch and 36-inch overflow pipe, 3,320 feet long, conveys surplus water from the forebay into the reservoir above Early Intake Diversion Dam to enter the main aqueduct to San Francisco, when the quantity entering the forebay exceeds that required for power operation. The main outlet from the forebay is a 42-inch diameter penstock pipe to the power house. After passing the turbines of the power house, water may be discharged directly into the Tuolumne River, as is done when water in excess of the requirement of Moccasin Power House is wasting from Hetch Hetchy Reservoir, or the discharge may be conducted through a 60-inch pipe line across Tuolumne River to enter the main aqueduct and be utilized at Moccasin Power House.

During the winter and spring seasons of each year considerable trouble has been experienced in keeping the grizzlies of the forebay above Early Intake power plant from becoming clogged by water-borne leaves, twigs and branches. Such material has heretofore been removed by hand raking. To handle it more rapidly and effectively, a mechanically-cleaned bar screen is to be installed in the forebay. This screen or grizzly will be kept clear by a rake continuously driven by an electric motor through suitable mechanism. Specifications for furnishing and installing this equipment are nearly ready, and the installation will be made during the fall of 1938.

During the week ending December 11, 1937, as a result of a three-day rain storm of unprecedented severity, the swollen Cherry River carried sand, gravel and debris into the Lower Cherry Aqueduct and damaged the diversion structure and headgates. For some distance from the intake, the upstream tunnel section of the aqueduct was partly filled with sand, gravel, and boulders up to a foot in diameter, with a few even much larger, which were carried over the protecting grizzly at the entrance by the swift-flowing high water in the river. Deer ladders in canal sections of the aqueduct were carried away, and other minor damage occurred. The power plant was shut down until January 10, 1938, while the work of repair and clean-up necessary to place the aqueduct in service again was done. The greater part of the material obstructing the tunnel was removed by flushing it out through an adit.

Preliminary plans were prepared for gunite lining in about 5,000 linear feet of open canal of the Lower Cherry Aqueduct, to increase the carrying capacity and improve the operating characteristics of the aqueduct. On May 26, 1938, an

O'SHAUGHNESSY DAM JULY 7, 1938
Reservoir and downstream face, showing water spilling at rate of 10,000 cubic feet per second.

application was filed with the Federal Emergency Administration of Public Works for government aid in financing this work. At the end of the fiscal year, no action has yet been taken on this application.

Preliminary plans were also prepared for the construction of four 5-room cottages and necessary facilities, to house permanent employees engaged in the operation and maintenance of the Hetch Hetchy Water Supply and Power Systems, who must reside at Early Intake, and who are now housed in inconveniently located or temporary quarters. This work was also included in the PWA application above mentioned.

Main Aqueduct, Mountain Division:

This division, which extends from Early Intake to Priest Reservoir, consists of a 5-mile tunnel and a 14-mile tunnel, connected by 225 feet of 9½-foot diameter steel pipe crossing South Fork of the Tuolumne River.

The Early Intake tramway was thoroughly overhauled during the year. Many defective ties were removed and replaced with new ties. The warehouses used in connection with this tramway were repaired.

At Early Intake Diversion Dam, the radial spillway gates were examined to determine the amount of material needed to make necessary repairs in the future. All of the sumps under the gates were found to be partly filled with debris, consisting of sand and pine needles. These sumps were opened up and cleaned out.

A considerable amount of road maintenance was done in this division during the fiscal year. Due principally to the extended storms mentioned elsewhere in this report, almost continuous work was required in maintaining the road from South Fork to Mather; also, the connecting road from this road to Early Intake required considerable maintenance, large slides occurring during the winter months on this road.

Periodical inspection was made of the South Fork pipe crossing. The road leading to this crossing was repaired during the year, as was the trail from South Fork to Adit 8-9. The road, however, suffered so heavily from washouts during the later rains that it was decided to recondition it as a trail only. Roads in the vicinity of the Groveland shops were overhauled. A gasoline pump was installed at the Groveland yard. As a protection against forest fires, brush was cleared away from all structures, and fire trails were cut at many locations in this division.

As part of the work under Contract No. 170, a 6-room cottage with a 2-car basement garage was constructed near Priest Reservoir, for the use of the reservoir keeper stationed at this point. The cottage has concrete foundation, timber frame, stucco exterior, and plastered interior, and is fully equipped and modern in all respects. A connection to the power transmission lines for supplying electricity to this cottage, a sewer system with septic tank and disposal field, and a water supply system taking water from the west portal of the power tunnel, were constructed for this cottage as part of the work under Contract No. 175. Further information on these contracts is given later in this report.

Main Aqueduct, Moccasin Division:

In this division, water is carried from Priest Reservoir through 5,370 feet of 13-foot tunnel, and 5,580 feet of steel penstock pipes to Moccasin Power Plant, and there discharged into Moccasin Reregulating Reservoir. Work on this division is carried on jointly by the Water Supply and the Power Operation Departments. For additional information on work in this division see the Power Bureau's section of this report.

Under Contract No. 169, a steel footbridge extending 100 feet toward the Moccasin Dam from the Auxiliary Outlet Tower, was constructed by L. Ubels, contractor, at the contract price of $2,384.44. This bridge was required to provide mooring for boats at a safe distance from the suction created when water is being discharged through this tower.

Contract No. 170, for constructing cottages at Moccasin and Priest, was completed on April 12, 1938, by S. C. Giles, contractor. This contract provided for the construction of the cottage at Priest Reservoir hereinabove mentioned, and four 5-room and four 4-room cottages, a 7-car garage building, an addition to the store building, woodsheds, and a water supply system for the cottages and garage at Moccasin. The total contract payment for this work was $78,554.10.

The cottages and garage at Moccasin were constructed as part of the building group southeast of the power house. They are of wood frame construction with plastered walls, tiled bathrooms and kitchens, and stucco exterior, being the same modern type of construction used for other cottages in the same section of the permanent operators' quarters.

Under contract No. 172, steel liner plates were installed in the invert of the Moccasin Diversion Conduit, at the contract price of $17,429.67, by MacDonald & Kahn Co., contractor. About 2,900 linear feet of steel plates 4 feet wide and ¼ inch thick were placed on the invert of the main bypass conduit and the conduit

leading to the auxiliary outlet tower. This work was necessary due to erosion of the previously unprotected concrete by gravel and sand carried by the Moccasin Creek water through the diversion conduit under Moccasin Reservoir.

The construction of the cottages under Contract No. 170 and the liner plates under Contract No. 172 was done under Federal Public Works Administration regulations, as part of P.W.A. Project No. 1130, and the government paid 45 per cent of the cost for this work.

Under Contract No. 175, L. Ubels, contractor, constructed the following works to serve the new cottages at Moccasin and Priest above mentioned:

Grading garden areas, and surfacing roads for cottages at Moccasin;
Concrete walks and walls, and wire mesh fences for cottages at Moccasin;
Fire protection and drainage systems for cottages at Moccasin;
Water supply and sewer systems for Priest cottage, and
Electric supply system for Moccasin and Priest cottages.

This work is estimated to cost $12,457.75, and was about ninety per cent complete on June 30, 1938.

Moccasin Reservoir was drained early in the fiscal year, to permit repairs to the bank where a slide occurred near the outlet tower. This slide extended nearly to the edge of the Coulterville Road, part of which might have slid into the reservoir if repairs had been delayed.

The creek bed above the upper Moccasin Dam was cleaned several times during the year of debris that had been carried down the creek. A considerable amount of material had accumulated due to the heavy rainfall experienced this winter. Also, the Grizzly Gulch Canal required cleaning several times during the year, to remove accumulations of gravel carried into it by the storms.

A chlorinating plant for treatment of the village water supply was installed and placed in operation this year.

The footbridge to the main outlet tower of Moccasin Reservoir was painted, and worn or decayed planking on this bridge was replaced.

Main Aqueduct, Foothill Division:

This division extends from the outlet of Moccasin Reregulating Reservoir to Oakdale Portal, a total distance of 16.3 miles. It consists of two tunnels, 5.28 and 10.57 miles in length, respectively, connected by the Red Mountain Bar Pipe Line 0.45 mile long, at the crossing of the Tuolumne River Canyon and Don Pedro Reservoir.

The usual maintenance work was done in this division. Roads to Brown Adit and from Hetch Hetchy Junction to Oakdale Portal were improved.

Water supply lines to working points in this division, and water tanks at the various points, were serviced.

At Oakdale Portal, during the period when no water was being turned into the aqueduct, cement grout was forced into the tunnel lining near the portal to prevent leakage of water through the rocks when maximum delivery of water would be made. This was a continuation of work started in the last fiscal year.

The record of the condition of the springs and wells in this division was brought up to date by a survey. This record is being maintained in anticipation of claims by property owners adjacent to the aqueduct, that the tunnel has been draining

the water supply on their property. The heavy precipitation of the past winters, it appears from these records, has brought the flow in many of the springs and wells back to normal.

Main Aqueduct, San Joaquin Division:

This division extends across the San Joaquin Valley, from Oakdale Portal to Tesla Portal, a distance of 47½ miles. While usually referred to as a 5-foot pipe line, it comprises diameters of 56, 58, 62, 66, and 72 inches. This pipe, with present capacity of 70 million gallons daily, is the limiting factor in the amount of water that may be transmitted to San Francisco from Hetch Hetchy at the present stage of construction, but when greater capacity is required, many years hence, it will only be necessary to build a second San Joaquin pipe line, as all other divisions of the aqueduct are already of much greater capacity.

The usual maintenance work was done during the year in this division. Valve houses and valve boxes were cleaned, exposed pipe was painted, valves were operated for test purposes, and services. Many extensions to valve stems on blowoff valves in concrete boxes were installed.

During two floods in the San Joaquin Valley, the high water flooded the San Joaquin Valve House located near Elliott Cut. After each flood, the valves and the interior of the house were scrubbed and cleaned and put into operating condition.

To protect the valve house against flooding by future floods, Contract No. 174, for constructing a levee around this valve house, was awarded to C. Dudley De Velbiss, on January 24, 1938, at the estimated contract price of $1,500. The specifications fix a construction period of sixty calendar days. However, before the contractor could commence construction, the second flood of the year occurred, and no work has been done on this contract up to the close of the fiscal year, as the flood waters still cover the ground in the vicinity of the valve house. Plans and specifications are being prepared for rip-rapping this levee and for pumping equipment for dewatering the valve house and the area to be enclosed by the levee.

The City's road which follows generally the route of the San Joaquin pipe line, to the Oakdale meter house, was much improved during the year.

Other road work in this division included the maintenance and reconstruction of culverts on roads used in connection with maintenance work, and in the installation of culverts where irrigation ditches cross these roads.

Main Aqueduct, Coast Range Division:

This division, nearly all of which is in tunnel, extends from Tesla Portal westerly through the Coast Range, 29.11 miles to Irvington Portal. It comprises the following sections, in order from east to west:

	Miles
Tunnel, Tesla Portal to Alameda East Portal: concrete lined, circular cross-section, inside diameter 10.5 ft....	25.07
Pipe crossing valley of Alameda Creek: reinforced concrete, with embedded sheet steel cylinder, inside diameter 69 inches.....	0.59
Tunnel, Alameda West Portal to Irvington Portal: same description as east section.....	3.45
	29.11

The construction of the Tesla Portal Chlorinating Plant under Contract No. 163, awarded to L. Ubels, December 28, 1936, was completed August 17, 1937, at a total contract cost of $30,228.19. This included a chlorinator building with 3-ton traveling crane, a pump house with two electrically-driven pumps each of 100 gallons per minute capacity, an operator's cottage, and a garage; connections to the Hetch Hetchy Aqueduct; two steel 20,000-gallon water supply tanks; and all piping and equipment except the chlorine and ammonia equipment, which was furnished and installed under a contract of the Purchaser of Supplies, HHWS Specifications No. 166, completed September 1, 1937, by Wallace and Tiernan, at a price of $11,980. The plant has a daily capacity of 2,000 lbs. of chlorine and 400 lbs. of ammonia. On completion, the plant was turned over to the San Francisco Water Department for operation.

Routine maintenance work on the City's roads and structures was performed during the year. An unusually large amount of road maintenance work was required for the clearing of slides and for resurfacing, as a result of the heavy rainfall of last winter. The road leading from the county road to Mocho shaft sustained the greatest damage from this cause. Extensive repair of the bridge over Arroyo Mocho, on this road, and reinforcement of the abutment bulkheads of the bridge, were necessary.

San Joaquin County repaired three bridges on the county road in Corral Hollow and constructed a new bridge on the county road between Carbona (south of Tracy) and Tesla Portal, crossing a waterway that is normally dry but carries considerable flow during heavy rains. This waterway previously was crossed by fording, and Tesla Portal was inaccessible by motor vehicles over this road when the water was too deep to ford.

The shafts along the tunnel line, with the crosscuts and working chambers at the tunnel level, are being cleaned out, all pipes, hangers, electric cables and debris being removed. In the construction shafts, the timber guides for the cages and buckets used in lowering and raising men and materials are left in place, in the two hoisting compartments, and at Indian Creek the ladder will remain in the manway compartment except for the upper 50 feet. This woodwork is in excellent condition and will be useful in future inspection. All other woodwork is being removed. On completion of the cleanout at each shaft the headframe is torn down. For future use a portable steel headframe is to be provided, which when necessary for inspection or repair work, can readily be hauled to any shaft and set up there and on conclusion of the work returned to storage. To June 30, 1938, the Valle Mocho, Mitchell and Thomas construction shafts were cleaned out, and this work will be completed in the Thomas ventilating shaft and Indian Creek construction shaft during July.

The tunnels and shafts were inspected in detail during the year. The concrete is in excellent condition throughout.

Strain gage readings were taken throughout the tunnels on bronze plugs that were set for that purpose during the construction of the concrete lining. The plugs are in pairs, the two plugs of each pair being 10 inches center to center, each plug having a small hole in the center. In general, the pairs of plugs are 1000 feet apart, but there are also some at intermediate points. By means of the strain gage the distance between the centers of plugs of a pair is measured with a precision of one ten-thousandth of an inch. On comparison of the reading with the last previous reading, the difference, if any, gives an indication of the amount of change in stress in the concrete. It is intended that a complete series of readings shall be taken at intervals of two or three years, so that if it should be found that

at any point slow changes in external ground pressure conditions are causing excessive increase in stress, steps may be taken to prevent damage. No such conditions have been detected or are expected.

The air compressors and hoists used in the construction of the Coast Range Tunnel were heavy units designed for permanent installation. To retain them for occasional relatively light service in connection with inspection and maintenance of the tunnel and shafts would have entailed considerable expenditure for their protection and maintenance. To avoid such expenditures, a portable air compressor and a portable double-drum hoist were purchased and the heavy equipment disposed of. The portable units are stored, when not in use, in the City's warehouse in Livermore, and are moved out when required to any point for use. Both were used in the shaft clean-out above described.

Each portable unit is driven by a gasoline engine. The compressor has capacity to compress 315 cubic feet of free air per minute to a pressure of 100 pounds per square inch. It is mounted on steel wheels. The hoist has a lifting capacity of 6,000 pounds at a rope speed of 160 feet per minute. The drums are 36 inches in diameter, with capacity for 1,000 feet of ⅝-inch wire rope on each. The hoist, with its engine, is mounted on a welded steel frame designed for bolting to concrete foundations which have been provided for it at all five construction shafts. It was specially designed to conform to the mine safety requirements of the State Industrial Accident Commission and to the City's requirements for portability.

Main Aqueduct, Bay Crossing Division:

This division extends from Irvington Portal, the west end of the Coast Range Tunnel, in Alameda County, to Redwood Portal, the inlet to Pulgas Tunnel, in San Mateo County, a total distance of 21.24 miles. It consists in general of two parallel pipe lines, nominally 5 feet and 5½ feet in diameter. Across the navigable channel of San Francisco Bay at Dumbarton Strait, for a distance of 0.6 mile there are two 54-inch pipes and one 42-inch pipe, especially designed for underwater construction.

The combined capacity of the two pipe lines is about 110 million gallons daily.

Construction work in this division, and maintenance and operation of the Bay Crossing Division of the Hetch Hetchy Aqueduct is handled by the San Francisco Water Department. These operations are described herein in the report of that department.

Main Aqueduct, Peninsula Division:

This division includes the Pulgas Tunnel, 10¼ feet in diameter, and the outfall canal into Crystal Springs Reservoir, a total length of 1.89 miles.

No maintenance work has been necessary in this division.

The Water Department has constructed a water temple at the west portal of the Pulgas Tunnel, at a point close to the county road. The area in the vicinity of this temple will be landscaped, with a view to attracting the public's attention to the present terminal of the Hetch Hetchy Aqueduct. The details of this construction are described in the report of the Water Department herein.

Construction for the Water Department:

The Hetch Hetchy Water Supply supervised the construction of two pipe lines under San Francisco Water Department contracts Nos. 112 and 156 respectively, of which one was completed and the second nearly completed, during the fiscal year.

Contract No. 112, Crystal Springs Pipe Line No. 2, Crystal Springs Dam to Burlingame: Last year's report noted the award of this contract to Williams Brothers and Haas, Inc., at the estimated total contract price of $644,185.95, and included a general description of this project.

The welded pipe, which in general is 60 inches in diameter, was fabricated by Western Pipe and Steel Company at South San Francisco. The protective covering of the pipe consists of coal-tar enamel inside and outside, of 3/32 inch average thickness, with an additional outside protection of spirally wrapped asbestos felt. Except for bends and special sections, the pipe was delivered at the site of the work in 30-foot lengths. A large portion of the line was laid in paved streets of Hillsborough, Burlingame and San Mateo. Two laying crews were employed, keeping the pipe laying close behind the trenching operations so as not to keep streets obstructed for long periods of time. Field welding was performed by Peerless Welding Company under subcontract.

Outlet tower No. 2 at Crystal Springs Dam, previously constructed to elevation 287.75 feet, was completed under this contract by the construction of a reinforced concrete deck at elevation 292, with hatchways, and a reinforced concrete parapet wall 3.5 feet high. Inside the tower three 54-inch gate valves were installed, one at each of three different levels; a five-foot diameter steel standpipe was constructed inside the outlet tower, extending the full height of the tower, with side branch connections to the 54-inch valves, and with base connection to the 78-inch pipe in the outlet tunnel; and steel stairs, hand-railing and floor-gratings were placed in the tower to facilitate operation and maintenance of the large valves. A reinforced concrete bridge, 80 feet long, with deck 6 feet wide, was constructed, giving access from the shore of the reservoir to the top of the outlet tower.

A venturi meter, to measure the flow of water through the Crystal Springs pipe line, was furnished by the City and installed by the contractor near the pump station at Crystal Springs Dam. A stucco building with tile roof was constructed to house the recording instruments for this meter.

All of the work necessary to put the pipe line in continuous service was completed on November 9, 1937, and all work required under the contract was completed on January 3, 1938, at a total cost of $658,615.26.

Contract 156, Palo Alto Pipe Line: This is a 36-inch diameter welded steel pipe line about 5.4 miles long, which is being constructed from a connection to the Bay Crossing pipe line at the Redwood City valve house, on the east side of El Camino Real just south of Redwood City, to a point near the intersection of El Camino Real and California Avenue in Palo Alto. The pipe used in this line was obtained by uncovering, removing, cleaning and reconditioning a portion of the Corral Hollow Pipe Line, which was built to avert possible water shortage during the construction of the Coast Range Tunnel, but was never used, and is no longer necessary since the tunnel is completed and in successful operation.

The contract was awarded to Macco-Robertson, Ltd., of Clearwater, California, on October 25, 1937, at the estimated contract price of $213,620.00. The contractor started field work on November 1, 1937, thirty days before the contract was formally approved, at his own risk, in order to take fullest advantage of fair weather.

In removal of the welded steel pipe from Corral Hollow Pipe Line, the earth was first excavated by blading with a bulldozer down to about two inches above the top of the buried pipe. Then, using a wheel type trenching machine, a trench was excavated 22 inches wide and 3 feet deep parallel to and about 2 inches away from one side of the pipe. The pipe was cut with oxy-acetelene torches, generally into 60-foot lengths, loosened from the ground by pulling sidewise from its original position as permitted by the new trench, and lifted out to the ground. The removed sections were then cut into 30-foot lengths, and hauled to the plant of Western Pipe and Steel Company at South San Francisco to be put in condition for relaying.

In reconditioning, the old dip coating was burnt off and the pipe was thoroughly cleaned by shot-blasting, after which each section was carefully inspected to determine the extent of pitting due to electrolysis, and all pits over ⅛ inch deep were spot-welded. A coal tar enamel lining and coating was then applied while the pipe, previously heated to 400° F., was spun at a peripheral speed of 1,100 feet per minute. An unbonded wrapping of asbestos felt followed and finally the finished sections were hauled to a field storage yard in Redwood City. The reconditioning of all pipe required for the new line was completed on February 17, 1938.

Due to severe winter weather, the contractor delayed trench excavation until April 4, 1938. Machine trenching was completed on June 8, 1938. Pipe laying followed closely behind the trenching operations, and with the exception of a creek crossing, all pipe was laid by June 9, 1938. At the close of the fiscal year, this contract was 91.2% complete.

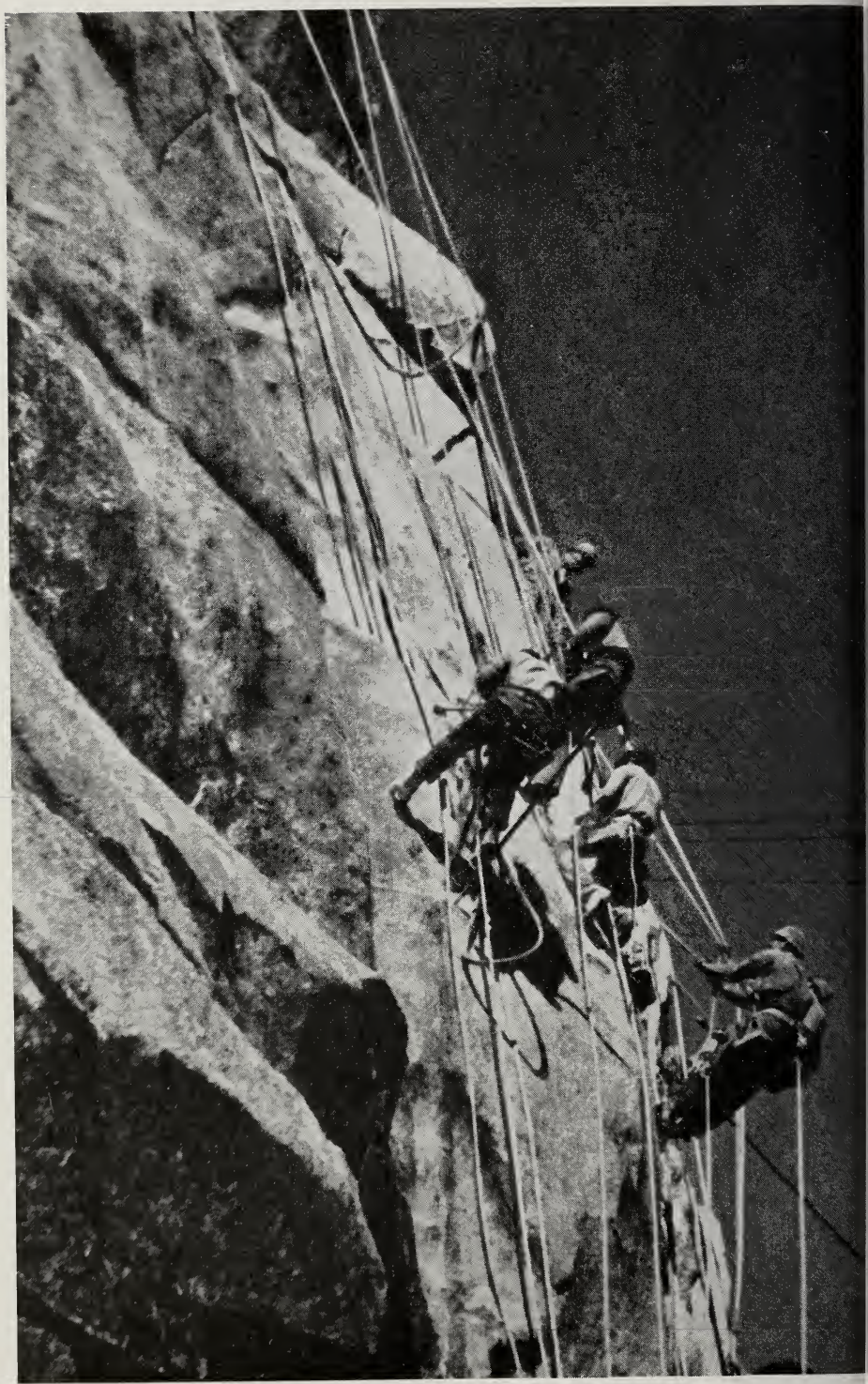
Pipe line construction in San Mateo County is supervised by L. A. McAtee, Construction Engineer.

Construction for Yerba Buena Airport and Golden Gate International Exposition:

Active field supervision by the Bureau of Engineering of construction work on Yerba Buena Shoals for the future Airport and for the Golden Gate International Exposition terminated at the close of the fiscal year 1937-38. On June 30, 1938, all on-site work under Federal Public Works Administration Docket No. 1427 was completed, in accordance with the requirement of the Administration fixing the close of the docket at that date. A few men will remain on the Shoals after June 30, 1938, to complete records in connection with the work and familiarize operating forces of the Exposition Company with the equipment of the various buildings constructed.

P.W.A. Docket No. 1427 provided for the construction of buildings, ferry slips, etc., on Yerba Buena Shoals and elsewhere in the City of San Francisco at an estimated cost of $4,209.609.00. A grant of 45 per cent of the estimated total cost of $4,209,609.00, or $1,894,324.00 is being paid by the United States Government toward the cost of this work. The total grant offered by the Government was earned, the total cost of work done under the docket being somewhat in excess of the amount estimated when the grant was applied for. The total expenditures under the docket to June 30, 1938, were $4,318,230.59, divided into major items as follows:

Contracts for construction, including authorized orders for extra work	$3,967,360.36
Office engineering, including fees for architectural and engineering services	259,229.68
Field supervision and inspection	84 693.18
General and Miscellaneous	6.947.37
Total expenditures, June 30, 1938	$4,318,230.59



HIGH SCALERS AT WORK, O'SHAUGHNESSY DAM.
View shows crew at work on north abutment removing granite as part of heightening of dam.

Pertinent information on contract work done under P.W.A. Docket No. 1427 ollows:

Contract 1, for construction of an Administration Building on a school lot at ush and Stockton Streets, San Francisco, was awarded by the Public Utilities ommission December 28, 1935, and the Exposition Company entered into occu- ancy of the building in August, 1936. The total contract price for this building as $148,860.68. The building is a Class "C" building of three full stories and asement. When vacated by the company, after the closing of the Exposition, his building will become available to the School Department.

Contract 2, for constructing three passenger slips and a freight ferry slip on erba Buena Shoals, awarded to Healy-Tibbitts Construction Company May 11, 936, was completed December 30, 1937, at a total contract price of $337,038.41.

Contract 3, for furnishing and erecting hydraulic hoisting machinery for the erry slips, constructed under Contract 2, originally advertised May 20, 1936, as finally awarded on second proposal to Healy-Tibbitts Construction Company larch 1, 1937. This work was completed December 30, 1937, at a total contract rice of $50,467.03.

Contract 4, for bituminous covering on untreated piles for use in construction f ferry slips, was awarded to Malott & Peterson May 11, 1936, and was completed lay 21, 1937, at a total contract price of $25,106.95.

Contract 5, provided for the purchase of structural steel, castings, and acces- ories for ferry slip aprons, through the Purchaser of Supplies, from Minneapolis- oline Power Implement Company. This material was all delivered by October 1, 1937, at a total contract price of $40,024.37.

Contract 6, for construction of two hangar buildings, awarded June 29, 1936, o MacDonald & Kahn Co., Ltd., was completed August 13, 1937, at a total con- ract price of $709,239.14. These hangar buildings, 217 ft. by 335 ft. in plan, with 40 ft. shop space on one side, are of concrete and steel construction on pile oundation, and will remain after the Exposition as permanent structures of the uture airport.

Contract 7, for constructing the Air Terminal Building, awarded July 27, 1936, o Clinton Construction Company, was completed March 30, 1938, at a total con- ract price of $684,148.97. This building, constructed of reinforced concrete on ile foundation, is semi-circular in shape, with three full floors with partial fourth loor and tower above, and full basement. It is elaborately and fully finished and vill remain after the Exposition as a part of the future airport.

Contract 8, for construction of the Exposition Palaces, awarded December 28, 936, to Guy F. Atkinson Co., was completed January 21, 1938, at a total contract rice of $1,169,805.84. Under this contract, the pile foundations, floor systems, tructural timber frames, composition roofs, and outside sheathing, were con- tructed for the six main exhibit palaces of the Exposition. Two of the buildings re 200 ft. by 650 ft., two are 200 ft. by 800 ft., and two are 200 ft. and 175 ft. by 50 ft. in plan.

Contract 9, for construction of the Ferry Terminal Building, was awarded March 1, 1937, to Clinton Construction Company. Work under this contract was ompleted April 28, 1938, at a total contract price of $116,836.00.

Contract 14, for constructing the Central Tower Building, awarded May 24, 937, to Guy F. Atkinson Company, was completed April 30, 1938, at a total con- ract price of $279,593.00. Under this contract the foundation, structural steel rame, and sheathing for the 400 feet high Tower of the Sun were constructed.

YERBA BUENA RESERVOIR
Capacity 3½ million gallons, constructed by Exposition Company on Yerba Buena Island to serve 1939 Exposition. This reservoir will revert to the City after the Fair and will then serve the Airport and Navy.

Contract 16, for constructing the four Pavilions of the Central Court, awarded to Clinton Construction Company June 4, 1937, was completed June 1, 1938, at a total contract price of $221,312.00. These pavilions are extensions of the palace buildings constructed under Contract 8, and surround the Central Court.

Contract 17, for constructing the South Towers, awarded on July 12, 1937, to E. T. Lesure, was completed January 21, 1938, at a total contract price of $76,856.61. The South Towers are ornamental structures forming the southerly entrance to the palace buildings.

Contract 18, for furnishing and driving piles in the foundations of the main entrance, east court, and east towers, was awarded to A. W. Kitchen on August 9, 1937, on bids received July 20, 1937. This contract was completed on November 4, 1937, at a total contract price of $34,917.00. The buildings supported by this piling were constructed under a contract let by the Exposition Company.

Contract 19, for constructing the Administrative Offices in the Air Terminal Building, not included under Contract 7, was awarded to Dinwiddie Construction Company on January 24, 1938, on bids received January 19, 1938, and was completed June 30, 1938, at a total contract price of $73,667.00. This contract provided for finishing certain rooms, and other interior improvements in the Air Terminal Building.

With the completion of contract 19, P.W.A. construction for the Golden Gate International Exposition ended, and the P.W.A. docket for this work was closed

In addition to its activities on P.W.A. work above mentioned, the Bureau of Engineering participated in the handling of the Works Progress Administration (W.P.A.) projects on Yerba Buena Shoals and on the original Yerba Buena Island, on which the City and County of San Francisco was sponsor. During the fiscal year, the work of making the Yerba Buena Shoals field fill, and the filling for the causeway connecting the Shoals fill to Yerba Buena Island, under one W.P.A. Project, was completed and accepted. This work was done in part as force account, and in part by contract, under supervision of the United States District Engineer's Office of the War Department.

Work under another W.P.A. Project, for the construction of portions of the approach roads on Yerba Buena Island, was practically completed at the close of the fiscal year by the United States District Engineer. Also, the water supply, the pipe line over the San Francisco-Oakland bridge, and the reservoir on Yerba Buena Island, mentioned elsewhere in this report, were completed during the year.

Permits for the right to construct the approach roads and the water supply facilities on Yerba Buena Island were acquired from the United States Navy and the Lighthouse Service. These permits were procured by the City and County of San Francisco, and under agreements with the Exposition Company the rights obtained were granted to the Company with the understanding that it would construct, use, and maintain these facilities during the life of the Exposition. Provision was also made in the agreement for the demolition of temporary structures built for Exposition purposes only.

General supervision of all projects in which the Public Utilities Commission participated in connection with the Exposition and future Airport on Yerba Buena Shoals was handled by J. H. Turner. J. H. Harwood, construction engineer, had direct field supervision of these activities until May 1, 1938, when he was transferred to other work. F. H. Stewart, building inspector, served as acting construction engineer for the balance of the construction.

Construction for San Francisco Airport:

Considerable progress was made on construction work at San Francisco Airport, at a total cost of $451,072.11, which is divided into $58,910.22 for contract work, $102,377.76 for Sponsor's contribution to Works Progress Administration (WPA) projects, and $289,784.13 for Federal contribution to W.P.A. Projects. A detailed account of the work done by and under the supervision of the Bureau of Engineering is included in the report of San Francisco Airport for this fiscal year.

In November, 1937, a bond issue in the amount of $2,850,000 was approved by the voters, under which the landing field will be increased in size from 205.7 acres to 521.3 acres, and extended runways, drainage, and lighting constructed. The seaplane harbor will be completed, and improved landplane port terminal facilities will be constructed. Substantial progress has been made on this new airport enlargement program.

Design of work at the Airport is under the direction of Geo. D. Burr, structural engineering designer, and construction work is supervised by A. J. Wehner, construction engineer.

HETCH HETCHY WATER SUPPLY

CURRENT CONTRACT DATA 1937-1938

H.H. No.	Title	Contractor	Date of Start	Time Days	Date Accepted	Bid	Payments to June 30, 1938	Bond Fund
149	—Enlargement of O'Shaughnessy Dam	Transbay Cons. Co.	5-14-35	1144	7- 1-38	$3,219,965.00	$3,477,000.69	1933
163	—Tesla Portal Chlorinating Plant	L. Ubels	2- 5-37	194	8-17-37	29,077.50	30,228.19	1932
164-A	—F.&D. Outlet Valves for O'Shaughnessy Dam	Joshua Hendy Iron Works	12-24-36	210	6-10-37	6,787.70	6,787.70	1933
164-B	— do	Pelton Water Wheel Co.	12-24-36	210	6-17-37	25,062.99	25,062.99	1933
166	—F.&I. Chl. & Ammonia Equip. for Tesla Chlorinating Plant	Wallace & Tiernan	3-12-37	173	9- 1-37	11,980.00	11,980.00	1932
169	—Steel Footbridge at Moccasin Reservoir	L. Ubels	9-29-37	90	12-19-37	2,423.50	2,384.44	Budget
170	—Cottages at Moccasin and Priest	S. C. Giles	9-15-37	210	4-12-38	73,684.00	78,554.10	1932
171	—F.&I. Traveling Water Screen in Lower Cherry Aqueduct	All bids rejected						
172	—Steel Liner Plates in Moccasin Diversion Conduit	MacDonald & Kahn Co.	12-10-37	100	12-22-37	18,320.00	17,629.97	1932
173	—Cottage at O'Shaughnessy Dam	L. Ubels	11- 8-37	215	3-31-38	15,280.00	15,422.60	1932
174	—Levee at San Joaquin Valve House	C. D. De Velbiss	2-28-38	199	.....	.....	.....	1932
175	—Conc. Walks, and Services at Moccasin and Priest	L. Ubels	6-13-38	75	.....	12,457.75	6,088.23	1932

F. & D.—Furnish and Deliver

BALANCE SHEET—JUNE 30, 1938

ASSETS

PROPERTIES:
(This is what it cost to build the Hetch Hetchy Water Supply System) $81,600,521.88
(The properties have been reduced in value by the cost, less salvage, of the Corral Hollow Pipeline, which has been partially removed) 1,500,000.00

$80,100,521.88

CASH:
(We have cash deposited with the Treasurer of the City and County of San Francisco totaling $3,957,810.94; of this $54,931.81 has been advanced by the San Francisco Water Dept. and the Hetch Hetchy Power Division for the operation and maintenance of the Properties in the production of water; $751,861.24 is deposited in the 1928, 1932 and 1933 Bond Construction Funds, of this $90,546.19 is unencumbered; $1,519,675.00 is deposited in the various Bond Interest Funds for payment of interest on Bonds issued for construction, of this $178,425.00 represents coupons not presented for payment and $1,341,250.00 interest maturing July 1, 1938; $1,623,000.00 is deposited in the Bond Redemption Funds, of this $23,000.00 represents bonds matured which have not been presented for payment and $1,600,000.00 maturing July 1, 1938; $8,192.89 is deposited in the P.W.A. Moccasin Diversion Works Fund, of this $5,621.70 is unencumbered; $150.00 is deposited in a Trust Fund, this represents an advance of cash made to us by a private corporation to cover the cost of hauling 2 carloads of freight from Mather to H. H. Junction on the H. H. Railroad) 3,957,810.94

OTHER CASH:
(We have $5,000.00 available in a revolving fund for the payment of expense accounts and other small items by the Utilities Engineer) 5,000.00

ACCOUNTS RECEIVABLE:
(We have due us from the Federal Government $203,051.63 for Federal Grants earned: $168,951.63 on Enlargement of O'Shaughnessy Dam and $34,100.00 on Moccasin Diversion Works. We also have outstanding $629.85 in accounts receivable, representing work done for others which as of June 30, 1938, had not been collected, making a total of 203,681.48

INTERFUND ACCOUNTS RECEIVABLE:
(This is owed to the Hetch Hetchy Water Supply by other City Departments for work done for them but for which the Hetch Hetchy Water Supply has not yet been paid) 29,872.53

DEFERRED CHARGES:
(This amount expended for material and supplies on hand, and also for cash or credit advanced for work and services rendered for operation and betterment of Hetch Hetchy Water Supply). 531,977.01

Properties and cash required for operation, maintenance and betterment of Hetch Hetchy Water Supply $84,828,863.84

LIABILITIES

BONDED DEBT:
(The Hetch Hetchy Water Supply proportion of the bonds outstanding total $54,759,300.00. Of this amount, cash has been provided and deposited with the Treasurer for $23,000.00 for bonds matured but not presented for payment, and $1,600,000.00 maturing July 1, 1938. The balance, $53,136,300.00, are unmatured, the first maturing December 1, 1938 and the last July 1, 1977) $54,759,300.00

BOND INTEREST PAYABLE:
Matured Coupons Unpaid
(This is the money due Bond Holders for interest who have not yet presented their Bond Coupons for payment) 178,425.00
Maturing July 1, 1938
(This is the money due Bond Holders for interest due on the first day of July, 1938) 1,341,250.00
Accrued—Not Due
(The monthly amount of interest on borrowed money not due until December 1, 1938, which is recorded on the books each month) 37,896.04

ACCOUNTS PAYABLE:
(This is the money the Hetch Hetchy Water Supply owes for materials, etc., purchased, Contract payments due and Contract retentions) 380,228.01

INTERFUND ACCOUNTS PAYABLE:
(This is due other City Departments by the Hetch Hetchy Water Supply for services rendered or work performed) 158,830.91

DEFERRED CREDITS:
(This is the amount received and set aside to perform certain obligations or reserved for contracts, purchase orders, and other commitments made by the Hetch Hetchy Water Supply) 291,024.84

This is what the Hetch Hetchy Water Supply owes $57,146,954.80

SURPLUS, JUNE 30, 1938:
(This is the ownership of the people of San Francisco in the Hetch Hetchy Water Supply system. It should be understood that most of this is invested in the system and is not in cash) ... $27,681,909.04

$84,828,863.84

EXHIBIT "B"

HETCH HETCHY WATER SUPPLY

COMPARATIVE OPERATING STATEMENT

Fiscal Years Ended June 30, 1936, June 30, 1937, and June 30, 1938

		Fiscal Year Ended June 30		
		1938	1937	1936
Plant Operating:				
6000	Salaries and Wages	$6,704.43	$19,896.27	$19,689.12
6010	Contribution to Retirement System	391.75	953.90	600.96
6020	Compensation Insurance	.....	.....	113.19
6030	Traveling	58.51	68.66	214.12
6050	Operating Supplies	614.67	1,041.47	1,952.07
6090	Miscellaneous	635.86	163.42	51.04
6095	Production Rents	10,000.00	2,090.00	2,090.00
		$18,405.22	$24,213.72	$24,710.50
Repairs and Maintenance:				
7000	Buildings and Structures (Water)	2,595.43	1,511.28	1,514.95
7002	Buildings and Structures (Joint)	4,553.30	3,078.03	.....
7010	Reservoirs, Dams and Intakes	1,147.25	407.00	775.22
7015	Waterways	215.33	302.70	.....
7020	Pipelines	5,994.70	3,859.31	2,581.15
7030	Miscellaneous Equipment (Joint)	1,766.69	1,003.86	2,666.04
7035	Aqueduct Tunnels	6,693.69	2,885.77	.....
7040	Roads and Trails (Lake Eleanor to Moccasin)	6,679.13	6,523.89	5,097.53
7041	Roads and Trails (Moccasin to Tesla Portal)	1,337.08	879.57	.....
7042	Roads and Trails (Tesla to Irvington Portal)	1,957.17	1,524.26	.....
7050	Automotive Transportation Equipment (Water)	*1,830.71*	859.58	752.08
7051	Automotive Transportation Equipment (Joint)	895.73	2,257.43	.....
7090	Miscellaneous	2,069.05	3,602.53	889.10
7095	Hydrography	3,558.43	3,924.05	3,582.18
		$37,632.27	$32,619.26	$17,858.25
Administrative and General:				
8000	Salaries and Wages	13,626.28	13,388.94	9,031.84
8005	Contributions to Retirement System	390.90	436.86	563.98
8010	Services of Other Departments	8,342.54	8,541.13	2,295.37
8015	Professional Services	2,682.71	1,825.00	950.00
8020	Stationery, Office Supplies and Postage	403.19	631.53	197.06
8025	Telephone and Telegraph	576.21	342.77	79.12
8030	Traveling	678.94	651.22	1,294.64
8035	Insurance	.....	.....	7.37
8040	Injuries and Damages	46.11	407.95	628.49
8041	Allowance for Sick Leave	500.00	.....	.....
8051	Automobile Insurance Premiums	591.39	685.47	394.14
8061	Water Rights and Damage Claims	24,004.89	.....	.....
8062	Legal Expense—Water Rights Litigation	2,513.38	.....	.....
8095	Miscellaneous	3.14	.....	.....
		$54,359.68	$26,910.87	$15,442.01
	Net Operating Expense	$110,397.17	$83,743.85	$58,010.76
Non-Operating Revenues:				
5205	Rental Income—Miscellaneous	2,507.83	2,704.09	2,600.75
5210	Interest Earned on Bank Deposits	4.10	22.51	.....
5220	Interest Earned on Treasurer's Balances	.....	2,280.54	3,052.21
		$2,511.93	$5,007.14	$5,652.96
		$107,885.24	$78,736.71	$52,357.80
Non-Operating Expense:				
9000	Bond Interest	2,409,341.49	2,440,488.99	2,458,229.34
9010	Rents	90.00	.....	.....
9020	Taxes (Actually Paid)	3,919.08	1,542.31	1,453.07
9050	Depreciation Expense	4,450.13	5,617.35	.....
		$2,417,800.70	$2,447.648.65	$2,459,682.41
	Net Loss Transferred to Surplus	$2,525,685.94	$2,526,385.36	$2,512,040.21

Italic figures denote loss and deficiency.

EXHIBIT "C"

HETCH HETCHY WATER SUPPLY
SURPLUS ACCOUNT
For the Twelve Months Ended June 30, 1938

Surplus—June 30, 1937		$26,997,175.10	
ADD:			
Contributions from Hetch Hetchy Power Division for Bond Interest and Redemption		950,826.00	
Contribution from Hetch Hetchy Power Division for Additions and Betterments, 1937-1938		6,816.07	
Contribution from San Francisco Water Department for Bond Interest and Redemption		447,025.00	
Contribution from San Francisco Water Department for Operating Expenses, 1937-1938		114,406.25	
Contribution from San Francisco Water Department for Additions and Betterments, 1937-1938		8,061.46	
Contributions from General Fund for Bond Interest and Redemption		2,574,232.59	
Grants Earned on Federal Public Works Projects—Hetch Hetchy Dam and Moccasin Diversion Works		232,558.22	
Premium on 1933 Hetch Hetchy Dam Bonds sold		137,438.55	
Miscellaneous Additions to Surplus:			
County Treasurer, Alameda County, Refund on Deposit	$19.00		
Sale of old buildings at South Fork	20.00		
Refund on old hospital bill—J. E. Gray, January, 1937	3.75	42.75	$31,468,581.99
DEDUCT:			
Unexpended Balance of Hetch Hetchy Power Division Contribution for Additions and Betterments, fiscal year 1936-37		$11,947.50	
Unexpended balance of San Francisco Water Department Contributions for Additions and Betterments, fiscal year 1936-37		8,317.50	
Net loss for 12 months ending June 30, 1938		2,525,685.94	
Retirement of Corral Hollow Pipe Line		1,226,150.00	
To cancel interest Newark-San Lorenzo Pipe Line, prior to Feb. 28, 1935		13,446.25	
Miscellaneous Deductions from Surplus:			
Loss on sale of one new circuit breaker	$600.00		
Reversal of Bond Interest prorated to P. W. A. Moccasin Diversion Works	525.76	1,125.76	3,786,672.95
Surplus—June 30, 1938			$27,681,909.04

Composition of Surplus
June 30, 1938

ADDITIONS:			
Contributions from Taxes and General Fund		$26,996,161.44	
Contributions from Hetch Hetchy Power Division for Bond Interest and Redemption and Construction		6,971,050.11	
Contributions from Hetch Hetchy Power Division for Additions & Betterments		9,407.97	
Contributions from Hetch Hetchy Power Division Production Rents		10,000.00	
Contributions from San Francisco Water Department for Bond Interest and Redemption		1,341,075.00	
Contributions from San Francisco Water Department for Operating Expenses		259,156.24	
Contributions from San Francisco Water Department for Additions and Betterments		21,958.02	
Interest received from Other Funds		77,801.23	
Bond Premium, 1910-1932		1,240,169.26	
Bond Premium, 1933 Hetch Hetchy Dam Bonds		137,438.55	
Grants earned on Federal Public Works Project—Hetch Hetchy Dam and Moccasin Diversion Works		1,211,450.00	
Miscellaneous Additions to Surplus:			
Refund on Audit Expense	$6.62		
Sale of old buildings, Moccasin Portal and South Fork Camps	125.00		
Refund on Deposit, County Treasurer, Alameda County	19.00		
Refund on old hospital bills, J. E. Gray, January, 1937	3.75	154.37	$38,275,822.19
DEDUCTIONS:			
Net Loss, July 1, 1935, to June 30, 1938		$7,564,111.51	
Bond Discount—1910 Fund		737,956.39	
Retirement of Corral Hollow Pipe Line		1,226,150.00	
Cost of Newark-San Francisco Pipe Line transferred to San Francisco Water Department		1,063,840.76	
Miscellaneous Deductions from Surplus:			
Cost of Printing Bonds	$728.73		
Loss on sale of one new circuit breaker	600.00		
Reversal of Bond Interest Prorated to P. W. A. Moccasin Diversion Works	525.76	1,854.49	10,593,913.15
			$27,681,909.04

SCHEDULE 1

HETCH HETCHY WATER SUPPLY

June 30, 1938

1000 FIXED CAPITAL IN SERVICE

		Dr.	Cr.
	Miscellaneous		
500	Rental from Lands and Rights of Way..	.....	$46,865.43
501	Sale of Water to Irrigation Districts....	.....	82,489.59
503	Revenues During Construction—Miscellaneous	.....	9,520.88
503-P	Misc. Credits Apportioned to Power Development	$11,325.18	
504	Rental of Bay Development Properties..	.....	2,779,155.35
701	Bond Interest—Since October 31, 1934	1,221,698.32	
704	Interest Earned on inactive Balances since October 31, 1934.....	.....	6,683.06
705	Misc. Interest Credits since Oct. 31, 1934	.....	31,484.38
711	Bond Interest During Construction to Oct. 31, 1934.....	8,366,752.10	
714	Interest Earned on Inactive Balances to October 31, 1934.....	.....	676,863.21
715	Miscellaneous Interest Credits to Oct. 31, 1934	.....	174,280.63
802	Lands and Rights of Way.....	632.19	
804	Legal Expense	206,354.08	
817	Roads and Trails—Payments to U. S. Government	1,250,000.00	
818	Roads and Trails—Construction in Yosemite National Park.....	206,170.95	
820	Miscellaneous Const. Expenditures.....	19,813.08	
822	Hetch Hetchy Division.....	18,689.79	
823	Lake Eleanor Division.....	3,365.87	
824	Mountain Division	2,814.74	
825	Priest Division	804.49	
826	Moccasin Division	32,392.17	
	Foothill Division		
827–1	General	8,308,643.29	
827–2	Lands and Rights of Way.....	87,731.37	
827–3	Tuolumne River Crossing	219,900.01	

FIXED CAPITAL UNDER CONSTRUCTION

1933 Hetch Hetchy Dam Bond Fund

		Dr.
1	Preliminary Expenses	$23,054.27
3	Construction Costs	3,612,747.59
4	Engineering Charges	127,245.32
5	Legal, Administrative and Other Overhead.....	20,215.40
6	Interest During Construction	271,367.19
7–1	Miscellaneous Equipment	1,504.80
7–2	Miscellaneous H. H. Railroad Repairs.....	141,688.49
7–3	Miscellaneous Other	4,967.29
		$4,202,790.35

P.W.A. Moccasin Diversion Works

		Dam and Conduit	Drainage System	Conduit Liners	Buildings
140–1	Preliminary	.....	$42.84	$25.87	$24.01
2	Legal and Administrative....	$580.40	.....	115.39	751.46
3	Office Engineering	7,303.28	1,072.65	727.37	2,096.15
4	Interest During Construction	6,973.93	155.44	168.79	2,238.19
8	Contracts	200,798.99	14,327.70	17,629.97	78,554.10
10	Testing Materials	52.64	.....	.....	4.05
13	Force Account—Labor	22.20	.....	.....	.....
16	Force Account—Other	2.44	.....	.....	.....
18	Inspection and Supervision—Labor	5,243.51	841.67	297.08	2,560.03
19	Inspection and Supervision—Material	139.57	.....	.....	.....
20	Inspection and Supervision—Other	503.12	128.14	46.50	589.04
23	Field Engineering—Labor ...	1,151.96	.....	.....	.....
24	Field Engineering—Material.	2.73	.....	.....	.....
25	Field Engineering—Other ...	112.74	.....	.....	.....
		$222,887.51	$16,568.44	$19,010.97	$86,817.03

	San Joaquin Division		
833–1	General	4,559,040.94	
833–2	Lands and Rights of Way	28,901.93	
	Coast Range Division		
834–1	Tunnel (Non-Contract)	16,199,614.50	
834–2	Lands and Rights of Way	194,901.55	
834–3	Administration and Engineering	1,391,158.39	
834–4	Alameda Creek Siphon	104,861.95	
834–5	Tunnel (Contract 135)	4,776,591.62	
	Materials, Supplies and Equipment		
840	Surplus from Construction (All features)	122,625.15	
	Corral Hollow Pipeline		
857–1	General	1,183,851.76	
857–2	Lands and Rights of Way	30,027.73	
	Bay Development		
860–1	General	156,725.96	
860–2	Lands and Rights of Way	4,597.16	
	1909 and 1910 Construction Funds		
1000	H. H. Railroad—Investment	2,801,076.12	
1001	H. H. Railroad—Net Revenue		66,245.72
1500	Total Construction Costs to July 1, 1927	22,820,270.06	
1600	Construction Costs since June 30, 1927.	229,434.73	
1700	Interest During Construction since June 30, 1927	6,345,500.57	
	Equipment		
1045.00	General Office Equipment	1,803.21	
1045.02	General Stores Equipment	164.80	
1045.03	General Transportation Equipment	5,954.60	
1045.04	General Construction Equipment	11,845.47	
		$80,926,035.83	$3,873,588.25
		3,873,588.25	
	NET DEBIT	$77,052,447.58	

Dam and Conduit	$222,887.51
Drainage System	16,568.44
Conduit Liner Plates	19,010.97
Buildings	86,817.03
Total P.W.A. Moccasin Diversion Works	$345,283.95

SCHEDULE 2

HETCH HETCHY WATER SUPPLY

DETAIL OF FUNDS, BONDED DEBT AND WARRANTS OUTSTANDING

June 30, 1938

	Trust Fund	Operating Fund	Bond Funds	P.W.A. Moccasin Diversion Works Fund	Bond Interest Funds	Bond Redemption Funds	Bonded Debt Matured Unpaid	Bonded Debt Unmatured	Bond Interest Matured Unpaid	Bond Interest Accrued Not Due	Warrants Outstanding
1910—4½%	....	.....	.....	.....	$634,680.00	$1,023,000.00	$23,000.00 *1,000,000.00	$12,686,300.00	$27,180.00 *607,500.00	.....	.....
1925—5%	....	.....	.....	.....	198,450.00	.....	.....	7,750,000.00	4,700.00 *193,750.00	.....	.....
1928—4½%	....	.....	$534.06	.....	557,055.00	600,000.00	*600,000.00	23,400,000.00	17,055.00 *540,000.00	.....	$506.00
1932—5¾%	....	.....	.....	.....	65,550.00	.....	.....	4,325,000.00	65,550.00	$20,723.95	.....
1932—5%	....	.....	.....	.....	10,600.00	.....	.....	1,234,000.00	10,600.00	5,141.67	.....
1932—4½%	....	.....	.....	.....	675.00	.....	.....	143,000.00	675.00	536.25	.....
1932—4%	....	.....	.....	.....	1,780.00	.....	.....	280,000.00	1,780.00	933.33	.....
1932—3%	....	.....	.....	.....	945.00	.....	.....	194,000.00	945.00	485.00	.....
1932—2¾%	....	.....	137,656.53	.....	2,640.00	.....	.....	324,000.00	2,640.00	742.50	423.18
1933—4%	....	.....	613,620.65	.....	47,300.00	.....	.....	2,800,000.00	47,300.00	9,333.34	5,108.44
Hetch Hetchy Water Supply	$150.00	$54,931.81	.....	.....	.....	.....	.....	.....	.....	.....	19,923.05
P.W.A. Moccasin Diversion Works Fund	....	.....	.....	$8,192.89	.....	.....	.....	.....	.....	.....	.....
	$150.00	$54,931.81	$751,861.24	$8,192.89	$1,519,675.00	$1,623,000.00	$1,623,000.00	$53,136,300.00	$1,519,675.00	$37,896.04	$25,960.67

* Amounts Maturing July 1, 1938.

SCHEDULE 3

HETCH HETCHY WATER SUPPLY

DETAIL OF INTERFUND BALANCES

JUNE 30, 1938

		Order	Dept. No.	Controller's Number	Invoice Number	Dr.	Cr.
	PUBLIC SERVICE ENTERPRISES						
3300	*San Francisco Water Department*						
	Refund on 1937-38 Operating Advance	.....	.....	.....	.....		$11,845.41
	Long Distance Telephone Tolls, etc.—May, 1938	W.O.	768-90	3237	H-6-52		23.96
							$11,869.37
3310	*Hetch Hetchy Power Division*						
	Due from H. H. P. O. on Uncompleted Work Orders	.....	.....	.....	.....	$25,214.52	
	Additional Operating Advance—Fiscal Year 1937-38	.....	.....	.....	.....	1,360.86	
	Total for Hetch Hetchy Water Supply					$26,575.38	
	1933 H. H. Dam—Advanced for H. H. Railroad Repairs	.....	.....	.....	.....		141,688.49
3330	*1933 Hetch Hetchy Dam Bond Fund*					$26,575.38	$141,688.49
	Preliminary expense of Enlargement of O'Shaughnessy Dam advanced by 1932 H. H. Bond Fund	.....	.....	.....	.....	$82,217.20	$82,217.20
3340	*San Francisco Airport*						
	Funds Advanced from 1932 Bond Fund for Engineering Expenditures	.....	.....	.....	.....	$3,297.15	
3360	*P.W.A. Moccasin Diversion Works Fund (Bond Fund)*						
	Funds advanced for additional projects	.....	.....	.....	.....	45,082.37	45,082.37
	Interest Accrued by Reason of Advances	.....	.....	.....	.....	1,460.63	1,460.63
						$46,543.00	$46,543.00
	Total Public Service Enterprises					$158,632.73	$282,318.06
	GENERAL CITY AND COUNTY						
3400	*Employee's Retirement System*						
	Payments made under Compensation Law—May, 1938	W.O.	768-106-7	3748-9	H-6-58 & 59		47.75
	Matching May contributions, Hetch Hetchy Water Supply	.....	.....	.....	H-6-5		109.87
	Matching June contributions, Hetch Hetchy Water Supply	.....	.....	.....	H-6-15 & 16		621.49
	Payments made under Compensation Law—June, 1938	.....	.....	.....	H-6-18, 19, 20 & 21		487.87
	Matching June contributions, 1933 H. H. Dam	.....	.....	.....	D 6-11		40.64
							$1,307.62
3450	*General Fund*						
	Advances for 1933 H. H. Dam						3,855.92
	Controller's Auditing Costs—May, 1938	F.A.O.	.....	436	D 6-6		7.73
	Controller's Auditing Costs—May, 1938	F.A.O.	.....	654	PWA 6-3		33.84
							$3,897.49
3490	*Real Estate Department*						
	Services and Travel expense in connection with proposed sale of property	W.O.	768-48	1512	H-6-60		$67.94
	Total General City and County						5,273.05

SCHEDULE 4

HETCH HETCHY WATER SUPPLY

1000 FIXED CAPITAL IN SERVICE
JUNE 30, 1938

		Balance June 30, 1937	Gross Additions	Retirements	Balance June 30, 1938
	Miscellaneous				
500	Rental of Land and Rights of Way	*$46,865.43*	.....	.....	*$46,865.43*
501	Sale of Water to Irrigation Districts	*82,489.59*	.....	.....	*82,489.59*
503	Revenues During Construction	*9,520.88*	.....	.....	*9,520.88*
503	Miscellaneous Credits apportioned to Power Development	11,325.18	.....	.....	11,325.18
504	Rental of Bay Development Properties	*2,779,155.35*	.....	.....	*2,779,155.35*
701	Bond Interest since October 31, 1934	1,221,698.32	.....	.....	1,221,698.32
704	Interest earned on inactive balances since October 31, 1934	*6,683.06*	.....	.....	*6,683.06*
705	Miscellaneous Interest Credits since October 31, 1934	*31,484.38*	.....	.....	*31,484.38*
711	Bond Interest during Construction to October 31, 1934	8,366,752.10	.....	.....	8,366,752.10
714	Interest earned on inactive balances to October 31, 1934	*676,863.21*	.....	.....	*676,863.21*
715	Miscellaneous Interest Credits to October 31, 1934	*174,280.63*	.....	.....	*174,280.63*
802	Lands and Rights of Way	632.19	.....	.....	632.19
804	Legal Expense	206,354.08	.....	.....	206,354.08
817	Roads and Trails—Payment to U. S. Government	1,250,000.00	.....	.....	1,250,000.00
818	Roads and Trails—Construction Yosemite National Park	206,170.95	.....	.....	206,170.95
820	Miscellaneous Construction Expenditures	19,813.08	.....	.....	19,813.08
822	Hetch Hetchy Division	98.78	18,591.01	.....	18,689.79
823	Lake Eleanor Division	735.83	2,630.04	.....	3,365.87
824	Mountain Division	.....	2,814.74	.....	2,814.74
825	Priest Division	804.49	.....	.....	804.49
826	Moccasin Division	17,953.76	14,438.41	.....	32,392.17
	Foothill Division				
827-1	General	8,308,540.63	102.66	.....	8,308,643.29
827-2	Lands and Rights of Way	87,683.93	47.44	.....	87,731.37
827-3	Tuolumne River Crossing	219,900.01	.....	.....	219,900.01

	San Joaquin Division				
833-1	General	4,557,188.19	1,852.75	.....	4,559,040.94
833-2	Lands and Rights of Way	28,386.93	515.00	.....	28,901.93
	Coast Range Division				
834-1	Tunnel (non-contract)	16,327,563.23	*126,917.46*	1,031.27	16,199,614.50
834-2	Lands and Rights of Way	194,178.09	723.46	.....	194,901.55
834-3	Administration and Engineering	1,391,158.39	.....	.....	1,391,158.39
834-4	Alameda Creek Siphon	104,861.95	.....	.....	104,861.95
834-5	Tunnel (Contract 135)	4,776,598.62	*7.00*	.....	4,776,591.62
	Material, Supplies and Equipment				
840	Surplus from Construction (All features)	.....	122,625.15	.....	122,625.15
	Corral Hollow Pipe Line				
857-1	General	1,185,651.76	*1,800.00*	.....	1,183,851.76
857-2	Lands and Rights of Way	30,027.73	.....	.....	30,027.73
	Bay Development				
860-1	General	156,725.96	.....	.....	156,725.96
860-2	Lands and Rights of Way	4,597.16	.....	.....	4,597.16
	1910 Water Construction Fund				
1000	Hetch Hetchy Railroad Investment	2,809,338.74	*8,262.62*	.....	2,801,076.12
1001	Hetch Hetchy Railroad—Net Revenue	*66,245.72*	.....	.....	*66,245.72*
1500	Construction Costs to June 30, 1927	22,820,270.06	.....	.....	22,820,270.06
1600	Construction Costs since June 30, 1927	235,241.53	*2,666.09*	3,140.71	229,434.73
1700	Interest During Construction since June 30, 1927	6,345,500.57	.....	.....	6,345,500.57
	Equipment				
1045-00	General Office Equipment	152.13	1,651.08	.....	1,803.21
1045-02	General Stores Equipment	.....	164.80	.....	164.80
1045-03	General Transportation Equipment	5,233.99	1,379.61	659.00	5,954.60
1045-04	General Construction Equipment	7,730.62	4,114.85	.....	11,845.47
		$77,025,280.73	$31,997.83	$4,830.98	$77,052,447.58

Italic figures denote loss and deficiency.

SCHEDULE 4A

HETCH HETCHY WATER SUPPLY

GROSS ADDITIONS

June 30, 1938

1000

822	**Hetch Hetchy Division**		
	Guest House at O'Shaughnessy Dam Adjustment, Aug., 1937. JE 24	*$98.78*	
	Guest House at O'Shaughnessy Dam—Plans and Specifications	773.35	
	Guest House at O'Shaughnessy Dam—Buildings	15,876.32	
	Install meters, transformers, etc., to serve permanent buildings—O'Shaughnessy Dam	778.46	
	Furnishings for guest house—O'Shaughnessy Dam	853.42	
	Purchase and install electric hoist—O'Shaughnessy Dam	408.24	$18,591.01
823	**Lake Eleanor Division**		
	Road Trestle at Tunnel No. 5 Early Intake	945.08	
	Electric lighting unit for Damtender—Lake Eleanor	894.01	
	Construct Stilling Well Lower Cherry	790.95	2,630.04
824	**Mountain Division**		
	Water stops on radial gates—Early Intake Diversion Dam	727.29	
	Walkway Early Intake Diversion Dam Spillway	505.12	
	Trestle Early Intake Tramway	798.42	
	Trash Screen at Forebay Early Intake	783.91	2,814.74
826	**Moccasin Division**		
	Install Air Conditioning Equipment in Moccasin Office Adjustment of June charge, August, 1937. JE 24	*82.12*	
	Install primary line for Contractor—Contract No. 172	294.67	
	Purchase six electric stoves for Moccasin Cottages	146.29	
	Construction of sidewalks, curbs, streets, etc., at Moccasin, Priest	8,136.17	
	Bridge to Auxiliary Tower—Moccasin Reservoir	3,147.04	
	Awnings for new cottages, Moccasin	251.48	
	Finish storage space, install awnings and grade grounds, Moccasin Dormitory	489.58	
	Install outhouse, Chlorinating Apparatus—Moccasin	2,055.30	14,438.41
	Foothill Division		
827–1	*General*		
	Install pressure gauge—Oakdale Portal	102.66	
827–2	*Lands and Rights of Way*		
	Alleged damage to springs and wells	47.44	150.10
	San Joaquin Division		
833–1	*General*		
	Construction of Levee, San Joaquin Pipeline	$965.86	
	Install hot water boiler, piping, etc., for Moccasin Swimming Pool. This should be 826 Mocc. to be reversed July, 1938	359.34	
	Extension stems to blow-off valve—S. J. Pipeline	481.75	
	Footbridge, San Joaquin valve house	45.80	1,852.75
833–2	*Lands and Rights of Way*		
	Purchase land and improvement for garage and warehouse at Oakdale	515.00	2,367.75
	Coast Range Division		
834–1	*Tunnels—(Non-contract)*		
	Refund of contribution to Public Utilities Commission	*$1,896.43*	
	Purification plant Tesla Portal	7,689.00	
	Purification plant Tesla Portal—Contract No. 163	4,902.89	
	Remove pipe hangers and wire from all shafts, Coast Range Division	13,562.75	
	Repair Sale and Handling of Equipment	*44,163.37*	
	Hospitalization	320.41	
	Material, Supplies and Equipment—C. R. Division	*70,665.53*	
	Material, Supplies and Equipment—General	*5,314.61*	
	Material, Supplies and Equipment—Foothill	*27,042.26*	
	Material, Supplies and Equipment—Livermore	*4,310.31*	*126,917.46*
834–2	*Lands and Rights of Way*		
	Alleged damage to Springs and Wells	723.46	
834–5	*Tunnels—(Contract No. 135)*		
	Refund on equipment misappropriated	*7.00*	*126,201.00*

840	*Material, Supplies and Equipment*		
	Surplus from construction (all features) 3422W—Material, supplies and equipment—Livermore Warehouse	68,725.50	
	3407-04 Coast Range Division Aqueduct Tunnels	6,988.47	
	3422-7-02 Transferred from 1910 Construction Fund, stored at Hetch Hetchy Junction	27,009.70	
	3422Z-01 Transferred from 1910 Construction Fund, stored at Moccasin	5,411.96	
	2407—General—Stored at Hetch Hetchy Junction	1,916.59	
	2407—Hetch Hetchy Railroad	8,262.62	
	3422Z-03 Transferred from 1910 Fund—Stored at Livermore	4,310.31	122,625.15
	Corral Hollow Pipe Line		
857–1	*General*		
	Sale of Circuit Breaker		*1,800.00*
1000	**HETCH HETCHY RAILROAD INVESTMENT**		
	2407—Hetch Hetchy R. R.—Material		*8,262.62*
1600	*Construction Costs since June 30, 1927*		
	Equipment Aqueduct Tunnels—Mountain Division		*2,666.09*
	GROSS ADDITIONS		
1045–00	*General Office Equipment*		
	1 No. 2056 olive green double door safe with 12 No. 2596 olive green roller shelves	$352.21	
	1 No. 75-405—5 drawer green invoice file	46.26	
	2 No. 2429½ oak revolving arm chairs, upholstered in brown top grain leather	79.58	
	1 Ditto machine 18F5 No. 2980 complete with cabinet stand 18F5 and roll FBF5-18"	360.50	
	2 Underwood Standard Typewriters Nos. 11/4791311 and 4791313	192.72	
	1 KS70 Kelvinator No. 1752164 Electric Refrigerator	131.50	
	4 No. CS 2071 olive green 3 drawer legal files	200.23	
	9 No. 7624 olive green cupboards 24" wide, 66" high, 18" deep outside with 4 adjustable shelves, double doors, 3 point locking device	214.21	
	1 Standard W.G.B. Oil Clarifier with fittings—Should be 1045-03—Corrected in July, 1938	9.42	
	1 9K1 RCA Radio 4113	64.45	1,651.08
1045–02	*General Stores Equipment*		
	2 Bennett Model 188 hand operated ten-gallon visible pumps with hose		164.80
1045–03	*General Transportation Equipment*		
	1 1937 Ford V8 Model 78, 85 H.P. Standard Coupe, Blue Color, equipped with bumpers, spare tire and tube and tire lock—Motor No. 18-3588950	660.23	
	1 1938 V8 Ford Coupe, 85 H.P., Black Color, complete accessories, Eng. No. 4302929	719.38	1,379.61
1045–04	*General Construction Equipment*		
	1 Double Drum Western Hoist powered with Buda YR425 gasoline engine—all in accordance with ERB Co.'s bid of 3/29/37, submitted under City of San Francisco proposal No. 1752		4,114.85
	Total Gross Additions		$31,997.83
	RETIREMENTS		
834–1	**Coast Range Division**		
	Tunnel (non-contract)		
	Retire from service:		
	2 No. F-588 used cupboards, one with door 6 sectional 1 drawer invoice transfer case 2 chairs 2 Underwood Standard typewriters Nos. 11/4335881 and 4581438E 1 Speedograph Machine S-18F—18" No. 3077		$1,031.27
1045–03	*General Transportation Equipment*		
	1 1935 Ford V8 Coupe, Motor No. 1889858		659.00
1600	*Construction Costs since June 30, 1927*		
	Retire water stops on Radial Gates Early Intake Diversion Dam	$727.29	
	Retire Walkway Early Intake Diversion Dam Spillway	505.12	
	Retire trestle Early Intake Tramway	798.42	
	Retire road trestle at Tunnel No. 5 Early Intake	945.08	
	Retire two gasoline pumps hand operated	164.80	3,140.71
	Total Retirements		$4,830.98

Italic figures denote loss and deficiency.

HETCH HETCHY WATER SUPPLY

EXPENDITURES—FISCAL YEAR 1937-1938

Account	Description	Amount	Hetch Hetchy Power Proportion		San Francisco Water Dept. Proportion	
			Per Cent	Amount	Per Cent	Amount
	Plant Operating					
6000	Salaries and Wages	$18,396.15	63.56	$11,691.72	36.44	$6,704.43
6010	Contributions to Retirement System	687.28	43.00	295.53	57.00	391.75
6030	Traveling	58.51	....	.....	100.00	58.51
6040	Compensation Insurance	2,809.60	100.00	2,809.60	....	.....
6050	Operating Supplies	614.67	....	.....	100.00	614.67
6090	Miscellaneous	635.86	....	.....	100.00	635.86
6095	Production Rents	20,000.00	50.00	10,000.00	50.00	10,000.00
		$43,202.07		$24,796.85		$18,405.22
	Repairs and Maintenance					
7000	Buildings and Structures (Water)	$2,595.43	....	.....	100.00	$2,595.43
7001	Buildings and Structures (Power)	4,263.21	100.00	$4,263.21	....	.....
7002	Buildings and Structures (Joint)	22,766.51	80.00	18,213.21	20.00	4,553.30
7005	Forebays, Penstocks and Tailraces	1,601.10	100.00	1,601.10	....	.....
7010	Reservoirs, Dams and Intakes	5,736.25	80.00	4,589.00	20.00	1,147.25
7015	Waterways	1,076.68	80.00	861.35	20.00	215.33
7020	Pipe Lines	5,994.70	....	.....	100.00	5,994.70
7025	Hydraulic Power Plant Equipment	5,308.70	100.00	5,308.70	....	.....
7030	Miscellaneous Equipment—Joint	3,533.35	50.00	1,766.66	50.00	1,766.69
7035	Aqueduct Tunnels	6,693.69	....	.....	100.00	6,693.69
7040	Roads and Trails (Lake Eleanor to Moccasin)	13,358.25	50.00	6,679.12	50.00	6,679.13
7041	Roads and Trails (Moccasin to Tesla)	2,674.21	50.00	1,337.13	50.00	1,337.08
7042	Roads and Trails (Tesla to Irvington)	1,957.17	....	.....	100.00	1,957.17
7050	Automotive Transportation Equipment (Water)	*1,830.71*	....	.....	100.00	*1,830.71*
7051	Automotive Transportation Equipment (Joint)	1,791.46	50.00	895.73	50.00	895.73
7052	Automotive Transportation Equipment (Power)	1,178.87	100.00	1,178.87	....	.....
7090	Miscellaneous	4,138.09	50.00	2,069.04	50.00	2,069.05
7095	Hydrography	4,448.04	20.00	889.61	80.00	3,558.43
		$87,285.00	....	$49,652.73	....	$37,632.27
	Administrative and General					
8000	Salaries and Wages	$18,841.08	27.68	$5,214.80	72.32	$13,626.28
8005	Contributions to Retirement System	685.80	43.00	294.90	57.00	390.90
8010	Services of Other Departments	8,342.54	....	.....	100.00	8,342.54
8015	Professional Services	2,682.71	....	.....	100.00	2,682.71
8020	Stationery, Office Supplies and Postage	403.19	....	.....	100.00	403.19
8025	Telephone and Telegraph	576.21	....	.....	100.00	576.21
8030	Traveling	678.94	....	.....	100.00	678.94
8040	Injuries and Damages	80.28	43.00	34.17	57.00	46.11

8041	Allowance for Sick Leave	1,000.00	50.00	500.00	50.00	500.00
8051	Automobile Insurance Premiums	591.39	....	.....	100.00	591.39
8061	Water Rights and Damage Claims	24,004.89	....	.....	100.00	24,004.89
8062	Legal Expense—Litigation re Water Rights	2,513.38	....	.....	100.00	2,513.38
8095	Miscellaneous	3.14	....	.....	100.00	3.14
		$60,403.55		$6,043.87		$54,359.68
	Fixed Charges					
9010	Rents	$90.00	....	.....	100.00	$90.00
9020	Taxes Actually Paid	7,816.22	49.86	$3,897.14	50.14	3,919.08
		$7,906.22		$3,897.14		$4,009.08
	Total Operating Expenses	$198,796.84		$84,390.59		$114,406.25
	Equipment					
1000-1045.00	One No. 75-405 Columbia Steel Filing Cabinet	$44.50	50.00	$22.25	50.00	$22.25
1000-1045.00	One K5-70 Kelvinator No. 1752164	131.50	50.00	65.75	50.00	65.75
1000-1045.00	One 9K1 R.C.A. Radio No. 4113	64.45	50.00	32.22	50.00	32.23
1000-1045.00	New filing equipment:	414.44	50.00	207.22	50.00	207.22
	Nine steel cupboards, 24" x 66" x 18"					
	Four metal Filing Cabinets, Legal, 3-drawer					
1000-1045.03	Two Ford V8 Coupes No. 12x31	1,113.18	50.00	556.59	50.00	556.59
		$1,768.07		$884.03		$884.04
	Buildings, Structures, and Improvements					
2000-501	Pressure gauge at Oakdale Portal	$102.66	....	.....	100.00	$102.66
2000-503	Extension stem to Blow-off Valve—S. J. Pipe Line	481.75	....	.....	100.00	481.75
2000-504	Footbridge—San Joaquin Valve House	45.80	....	.....	100.00	45.80
2000-505	Electric Lighting Unit—Lake Eleanor Dam Tender	894.01	50.00	447.01	50.00	447.00
2000-506	Bridge to Auxiliary Tower—Moccasin Reservoir	3,147.04	....	.....	100.00	3,147.04
2000-513	Stilling Well—Lower Cherry Gauging Station	790.95	10.00	79.09	90.00	711.86
2000-515	Awnings for new cottages—Moccasin	251.48	50.00	125.74	50.00	125.74
2000-516	Finish storage space, etc.—Moccasin Dormitory	489.58	50.00	244.79	50.00	244.79
2000-519	Trash Screen—Forebay at Early Intake	783.91	100.00	783.91	....	.....
2000-520	Chlorinator for Camp Water Supply—Moccasin	2,055.30	50.00	1,027.65	50.00	1,027.65
		$9,042.48		$2,708.19		$6,334.29

Italic figures denote loss and deficiency.

HETCH HETCHY WATER SUPPLY

EXPENDITURES—FISCAL YEAR 1937-1938

Account	Description		Hetch Hetchy Power Proportion		San Francisco Water Dept. Proportion	
	Current Depreciation Replacements	Amount	Per Cent	Amount	Per Cent	Amount
3608-801	Water stops on Radial Gates—Early Intake Diversion Dam	$727.29	90.00	$654.56	10.00	$72.73
3608-804	Walkway—Early Intake Diversion Dam Spillway	505.12	90.00	454.61	10.00	50.51
3608-808	Trestle—Early Intake Tramway	798.42	90.00	718.58	10.00	79.84
3608-809	Road Trestle and Tunnel 5—Early Intake	945.08	90.00	850.57	10.00	94.51
3608-1045-00	Two Revolving Chairs	79.58	50.00	39.79	50.00	39.79
3608-1045-00	One Filing Cabinet—5-drawer, Letter	46.26	50.00	23.13	50.00	23.13
3608-1045-00	One Double Safe with shelves	334.21	50.00	167.10	50.00	167.11
3608-1045-00	One Ditto Machine with stand	335.50	50.00	167.75	50.00	167.75
3608-1045-00	Two Underwood Typewriters	130.72	50.00	65.36	50.00	65.36
3608-1045-02	Two 10-gallon Gasoline Pumps	164.80	50.00	82.40	50.00	82.40
		$4,066.98		$3,223.85		$843.13
	Total Equipment, Bldgs., Structures and Impts. and Current Depreciation Replacements	$14,877.53		$6,816.07		$8,061.46
	Total Operating Expenses	198,796.84		84,390.59		114,406.25
		$213,674.37		$91,206.66		$122,467.71
	Reserve of Unexpended Operating Advances June 30, 1938 (Detail Attached)	38,843.68		7,591.30		31,252.38
		$252,518.05		$98,797.96		$153,720.09
	Reserve of Unexpended Operating Advances to June 30, 1937 (Detail Attached)	$20,265.00		$11,947.50		$8,317.50	
	Annual Appropriation Ordinance (1937-38)						
	Controller's Cash Transfer Voucher July 19, 1937—No. 33	239,928.00		82,680.00		157,248.00	
	Supplemental Appropriation (1937-38)						
	Controller's Cash Transfer Voucher June 30, 1938—No. 739	2,809.60	263.002.60	2,809.60	97,437.10		165,565.50
	Additional Contribution from H. H. Power Division		1,360.86		1,360.86		
	Refund to San Francisco Water Department		*11,845.41*				*11,845.41*
			$252,518.05		$98,797.96		$153,720.09

Italic figures denote loss and deficiency

RESERVE OF SAN FRANCISCO WATER DEPARTMENT AND HETCH HETCHY POWER OPERATING ADVANCES FOR COMMITMENTS AS OF JUNE 30, 1938

Order	Number	Description	Account	Amount	Hetch Hetchy Power Proportion		San Francisco Water Dept. Proportion	
					Percent	Amount	Percent	Amount
Purchase	42034	Stocks Body Works Inv. No. 8-46	7051-G	$37.75	50.00	$18.87	50.00	$18.88
Purchase	42035	Tire Repair Inv. No. 8-53	7051-G	2.75	50.00	1.38	50.00	1.37
Purchase	41420	Typewriter Repairs—Cancelled	8020	25.00	.....	.....	100.00	25.00
Purchase	41426	Typewriter Repairs—Cancelled	8020	20.00	.....	.....	100.00	20.00
Purchase	42092	Zellerbach Paper Inv. No. 7-25	8020	61.39	.....	.....	100.00	61.39
Purchase	42277	A. C. Lo Prest Recorder Open	8061	597.40	.....	.....	100.00	597.40
Purchase	42246	U. S. Fire Insurance Premium Inv. No. 8-24	8035	650.00	80.00	520.00	20.00	130.00
Purchase	42144	Four Wheel Drive Inv. No. 7-27	7052-G	9.27	100.00	9.27	.....	.....
Purchase	41643	Air Reduction—Demurrage Inv. No. 7-7 to 7-15	7035-3	6.00	.....	.....	100.00	6.00
Purchase	41795	Kahn & Keville—Cancelled	7050-G	25.00	.....	.....	100.00	25.00
Purchase	41862	Tidewater Associated Oil—Gasoline Inv. No. 8-39 & 8-40.	7050-G	40.00	.....	.....	100.00	40.00
Purchase	41863	Tidewater Associated Oil—Open	7050-G	40.00	.....	.....	100.00	40.00
Purchase	41864	Tidewater Associated Oil—Gasoline Inv. No. 8-30, 31 & 32	7050-G	70.00	.....	.....	100.00	70.00
Purchase	41870	Byers & Oram—Cancelled	7052-G	25.00	100.00	25.00	.....	.....
Purchase	41871	Tidewater Associated Oil—Gasoline Inv. No. 8-26 & 27..	7052-G	60.00	100.00	60.00	.....	.....
Purchase	41873	Tidewater Associated Oil—Cancelled	7052-G	20.00	100.00	20.00	.....	.....
Purchase	41952	Stuart Oxygen—Rental Open	7090-5	1.00	50.00	.50	50.00	.50
Purchase	41953	Central Garage & Battery Co.—Cancelled	7052-G	25.00	100.00	25.00	.....	.....
Purchase	41954	Byers & Oram—Repairs Inv. No. 8-51	7052-G	25.00	100.00	25.00	.....	.....
Purchase	41956	Air Reduction—Rental Inv. No. 8-5	7090-5	5.00	50.00	2.50	50.00	2.50
Purchase	42284	Transbay Const. Co.	1000-1045-02	53.07	50.00	26.54	50.00	26.53
Work	768-101/3527	S. F. W. D. Inv. No. 7-48	8025	100.00	.....	.....	100.00	100.00
Work	768- 97/3528	Bureau of Engineering Inv. No. 862-16	8061	1,600.00	.....	.....	100.00	1,600.00
Work	768- 24/ 714	Depreciation Survey Intra Departmental	9030	4,000.00	.....	.....	100.00	4,000.00
Work	768-102/3661	Depreciation Survey Inter Departmental	9030	4,000.00	.....	.....	100.00	4,000.00
Work	768/103/3663	Depreciation Survey Inter Departmental	9030	14,500.00	.....	.....	100.00	14,500.00
Work	768- 99/3529	Bureau of Engineering Inv. No. 762-359	8010	750.00	.....	.....	100.00	750.00
Work	768/100/3530	S. F. W. D. Cancelled	7050-G	50.00	.....	.....	100.00	50.00
Work	768/104/3713	S. F. W. D. Inv. No. 7-49	7052-G	10.00	100.00	10.00	.....	.....
Work	768/1/45	Intra Departmental—Repairs to Concrete Canal	7015	598.31	80.00	478.65	20.00	119.66
Work	768/3/200	Intra Departmental—Raising Air Valve at Mile 53-73	7020-3	313.00	.....	.....	100.00	313.00
Work	768/5/202	Intra Departmental—Grouting Tunnel 500 ft. West of Pedro Adit	7035-2	276.65	.....	.....	100.00	276.65
Work	768/6/203	Intra Departmental—Repair Water Guide—Mocc. Res...	7010-5	341.00	.....	.....	100.00	341.00
Work	768/7/204	Intra Departmental—Fill and cover pipe—Irvgtn Ptl....	7020-5	390.00	.....	.....	100.00	390.00
Service	768/124/2500	U. S. Geological Survey Inv. No. 8-57	8061	62.50	.....	.....	100.00	62.50
Service	768/124/2500	U. S. Geological Survey Inv. No. 8-57	7095	287.50	20.00	57.50	80.00	230.00
Service	768/125/2499	M. G. Callaghan Inv. No. 7-4	8061	100.00	.....	.....	100.00	100.00
O.F.W.	668/3/2316	Meter rating Station—Turlock (1936-1937)	2000-508	950.00	10.00	95.00	90.00	855.00
Contract	No. 177	Trash Screen Forebay Early Intake (1936-1937)	2000-519	6,216.09	100.00	6,216.09	.....	.....
				$36,343.68		$7,591.30		$28,752.38
Acct. 3593		Deferred Debit—Advance to P. U. C. for Depreciation Survey		2,500.00	.....		100.00	2,500.00
				$38,843.68		$7,591.30		$31,252.38

HETCH HETCHY WATER SUPPLY

RESERVE OF SAN FRANCISCO WATER DEPARTMENT AND HETCH HETCHY POWER OPERATIVE ADVANCES FOR COMMITMENTS AS OF JUNE 30, 1937

Order	Number	Description	Account	Amount	Hetch Hetchy Power Proportion		San Francisco Water Dept. Proportion	
					Percent	Amount	Percent	Amount
W.O.	668-12/185	Pressure Gauge at Oakdale Portal	2000-501	$100.00	...	.....	100	$100.00
W.O.	668-14/187	Extension Stem to Blow-off Valve—S. J. Pipeline	2000-503	500.00	...	.....	100	500.00
W.O.	668-15/188	Footbridge—San Joaquin Valve House	2000-504	250.00	...	.....	100	250.00
W.O.	668-16/189	Electric Lighting Unit—Lake Eleanor Damtender	2000-505	900.00	50	$450.00	50	450.00
Contract	No. 169	Bridge to Auxiliary Tower—Moccasin Reservoir	2000-506	3,500.00	...	.....	100	3,500.00
O.F.W.	668-3/2316	Meter Rating Station—Turlock	2000-508	950.00	10	95.00	90	855.00
W.O.	668-23/196	Stilling Well—Lower Cherry Gauging Station	2000-513	795.00	10	79.50	90	715.50
W.O.	668-25/197	Awnings for New Cottages—Moccasin	2000-515	300.00	50	150.00	50	150.00
W.O.	668-26/198	Finish Storage Space—Moccasin Dormitory	2000-516	500.00	50	250.00	50	250.00
Contract	No. 177	Trash Screen at Forebay—Early Intake	2000-519	7,000.00	100	7,000.00	...	.....
P.O.	36792	Chlorinator for Camp Water Supply—Moccasin	2000-520	2,500.00	50	1,250.00	50	1,250.00
W.O.	668-31/203	Water Stops on Radial Gates—E. I. Diversion Dam	3608-803	750.00	90	675.00	10	75.00
W.O.	668-32/204	Walkway, E. I. Diversion Dam Spillway	3608-804	500.00	90	450.00	10	50.00
W.O.	668-36/208	Trestle—Early Intake Tramway	3608-808	750.00	90	675.00	10	75.00
W.O.	668-37/209	Road Trestle at Tunnel 5—Early Intake	3608-809	970.00	90	873.00	10	97.00
				$20,265.00		$11,947.50		$8,317.50

HETCH HETCHY WATER SUPPLY AND POWER PROJECT
CONSOLIDATED BALANCE SHEET
June 30, 1938

ASSETS AND OTHER DEBITS
Utility Plant

Fixed Capital:		
In Service	$103,205,933.85	
Under Construction	4,548,074.30	$107,754,008.15
Less Reserves:		
For Depreciation of Electric Plant	1,782,613.31	
For Corral Hollow Pipe Line	1,500,000.00	3,282,613.31
Total Utility Plant		$104,471,394.84

Current and Accrued Assets

Cash on deposit with Treasurer	$4,088,173.42	
Cash—Other	8,458.88	
Accounts Receivable	202,561.22	
Federal Grants Receivable	203,051.63	
Interfund Accounts Receivable	3,437.77	
Material and Supplies	18,660.69	
Material and Supplies—Salvage from Corral Hollow Pipeline	273,850.00	
Prepayments:		
Electric Energy, Tesla Chlorinator $ 3,863.25		
Advances to P. U. C. Depreciation Survey 5,000.00		
Rents 10,000.00	18,863.25	
Total Current and Accrued Assets		4,817,056.86

Deferred Debits

Work in Progress	$19,091.17	
Suspense Debits	12,127.39	
Contracts, Purchase Orders, Work Orders and Other Commitments (Contra)	76,072.03	107,290.59
Total		$109,395,742.29

LIABILITIES AND OTHER CREDITS
Long Term Debt

Bonds:		
Due July 1, 1938	$1,600,000.00	
Issue 1910 Due July 1, 1939 to July 1, 1964	26,000,000.00	
Issue 1925 Due Jan. 1, 1939 to Jan. 1, 1969	7,750,000.00	
Issue 1928 Due July 1, 1939 to July 1, 1977	23,400,000.00	
Issue 1932 Due June 1, 1939 to June 1, 1971	6,500,000.00	
Issue 1933 Due Dec. 1, 1939 to Dec. 1, 1953	2,800,000.00	
Total Long Term Debt		$68,050,000.00

Current and Accrued Liabilities

Accounts Payable:		
Warrants Outstanding $30,656.39		
General Creditors 6,870.44		
Contract Payments Due 6,088.23		
Contract Retentions 344,877.48	$388,492.54	
Interfund Accounts Payable—P. S. E. San Francisco Water Dept.	11,869.37	
Interfund Accounts Payable:		
General City and County	5,754.60	
Matured Long Term Debt:		
Matured Bonds not presented for Payment	23,000.00	
Matured Interest:		
Matured Coupons not presented for Payment	178,425.00	
Maturing July 1, 1938	1,341,250.00	
Interest Accrued, Not Due	37,896.04	
Total Current and Accrued Liabilities		1,986,687.55

Deferred Credits

Suspense Credits	$221.29	
Contracts, Purchase Orders, Work Orders and Other Commitments (Contra)	76,072.03	
Total Deferred Credits		76,293.32

Reserves

Reserve for Compensation Insurance	$5,365.83	
Reserve for Vacations	5,772.63	
Reserve for Sick Leave	1,494.44	
Reserve for Retirement System	2,021.33	
Reserve for Encumbrance of Work not yet performed—S. F. Water Dept.	31,252.38	45,906.61
Total Liabilities and Other Credits		$70,158,887.48

Surplus

Surplus (See detail annexed)	39,236,854.81
Total	$109,395,742.29

HETCH HETCHY WATER SUPPLY

1933 HETCH HETCHY DAM BOND FUND, BOND INTEREST AND BOND REDEMPTION FUND

STATEMENT OF RECEIPTS, EXPENDITURES AND BALANCES AS OF JUNE 30, 1938

	Detail	Totals	Bond Fund	Bond Interest Fund	Bond Redemption Fund
Proceeds from Sale of Bonds:					
Par Value	$3,500,000.00				
Premium on Bonds	197,338.75	$3,697,338.75	$3,697,338.75		
Advances:					
From Taxes (5-31-35)	175,000.00	175,000.00			$175,000.00
From General Fund (11-30-37)	175,000.00	175,000.00			175,000.00
From General Fund (11-30-37)	582.06	582.06	582.06		
From General Fund (5-14-38)	49,260.03	49,260.03	49,260.03		
Federal Grants Received:					
Grant Requisition No. 1 (6-11-36)	60,067.94				
Grant Requisition No. 2 (7-13-36)	49,624.31				
Grant Requisition No. 3 (11-30-36)	91,040.43				
Grant Requisition No. 4 (2-4-37)	122,084.46				
Grant Requisition No. 5 (3-31-37)	127,982.97				
Grant Requisition No. 6 (6-8-37)	36,627.19				
Grant Requisition No. 7 (7-27-37)	128,296.39				
Grant Requisition No. 8 (10-15-37)	100,973.00				
Grant Requisition No. 9 (1-4-38)	136,359.81				
Grant Requisition No. 10 (3-31-38)	20,923.43				
Grant Requisition No. 11 (5-10-38)	15,068.44	889,048.37	889,048.37		
Federal Grants Earned:					
Unbilled	168,951.63	168,951.63	168,951.63		
Interest Received:					
Accrued Interest on Bonds Sold:					
$175,000.00—6-1-34 to 11-30-34—4%	3,480.55				
3,325,000.00—12-1-34 to 5-9-35—4%	58,372.22	61,852.77		$61,852.77	
Interest Earned on Bank Balances:					
1934—1 Quarter	307.42				
1935—4 Quarters	33,200.70				
1936—4 Quarters	15,142.67				
1937—3 Quarters	5,062.39	53,713.18		53,713.18	
Transfers:					
Interest During Construction			*331,267.39*	331,267.39	
Interest During Construction—Funding			9,333.34	*9,333.34*	
Bond Redemption			*350,000.00*		350,000.00
Total Receipts		$5,270,746.79	$4,133,246.79	$437,500.00	$700,000.00

Fixed Capital Under Construction:					
1 Preliminary	$23,054.27		$23,054.27		
3 Construction Costs	3,613,135.59		3,613,135.59		
4 Engineering Charges	132,474.72		132,474.72		
5 Legal, Administrative and Other Overhead	20,990.05		20,990.05		
6 Interest During Construction	331,267.39			$331,267,39	
7 Miscellaneous—1 Equipment	1,504.80		1,504.80		
—2 H. H. Railroad Repairs	141,688.49		141,688.49		
—3 Other	4,967.29		4,967.29		
		$4,269,082.60	$3,937,815.21	$331,267.39	
Uncompleted Contracts		9,710.46	9,710.46		
Bond Redemption, Matured		700,000.00			700,000.00
Bond Interest Matured and Accrued	446,833.34				
Less Interest During Construction	331,267.39	115,565.95		115,565.95	
		$5,094,359.01	$3,947,525.67	$446,833.34	$700,000.00
Unexpended Balances		$176,387.78	$185,721.12	*$9,333.34*	
Treasurer's Cash Balances		$660,920.65	$613,620.65	$47,300.00	
Accounts Receivable:					
Federal Grants Earned					
Billed					
Unbilled	$168,951.63	$168,951.63	$168,951.63		
		$829,872.28	$782,572.28	$47,300.00	
Less Accounts Payable:					
355 Hetch Hetchy Power Depreciation Fund		141,688.49	141,688.49		
360 1932 Hetch Hetchy Construction Fund		82,217.20	82,217.20		
400 Employees' Retirement System		40.64	40.64		
420 General Fund		3,855.92	3,855.92		
420 General Fund—Controller		7.73	7.73		
510 Bond Interest Matured, Unpaid		47,300.00		$47,300.00	
515 Bond Interest Accrued, Not Due		9,333.34		9,333.34	
600 General Creditors		153.22	153.22		
601 Hetch Hetchy Water Supply Revolving Fund		3.14	3.14		
605 Warrants Outstanding		5,108.44	5,108.44		
615 Contract Retentions		344,201.01	344,201.01		
640 Contracts, Purchase Orders and Other Commitments		16,102.51	16,102.51		
685 Reserve for Compensation Insurance		3,472.86	3,472.86		
		$653,484.50	$596,851.16	$56,633.34	
Unexpended Balances		$176,387.78	$185,721.12	*$9,333.34*	

Italic figures denote loss and deficiency.

HETCH HETCHY WATER SUPPLY AND POWER PROJECT

CONSOLIDATED COMPARATIVE INCOME STATEMENT

June 30, 1938

UTILITY OPERATING INCOME	Fiscal Year Ended June 30, 1938			Fiscal Year Ended June 30, 1937		
	Total	Water	Power	Total	Water	Power
Operating Revenues:						
Power Sales						
Moccasin Power House						
General Consumers	$8,717,976.55	.....	$8,717,976.55	$8,367,742.19	.....	$8,367,742.19
Less Distribution Commission	6,420,082.43	.....	6,420,082.43	6,153,343.84	.....	6,153,343.84
	$2,297,894.12	.....	$2,297,894.12	$2,214,398.35	.....	$2,214,398.35
Early Intake Power House						
General Consumers	69,293.12	.....	69,293.12	54,889.33	.....	54,889.33
Construction, Operating and Miscellaneous	18,882.93	.....	18,882.93	34,965.44	.....	34,965.44
	$88,176.05	.....	$88,176.05	$89,854.77	.....	$89,854.77
Total Power Sales	$2,386,070.17	.....	$2,386,070.17	$2,304,253.12	.....	$2,304,253.12
Operating Revenue Deductions:						
Operating Expenses						
Production Expense	229,223.04	$56,127.49	173,095.55	215,633.87	$56,832.98	158,800.89
Transmission Expense	31,564.58	.....	31,564.58	26,091.36	.....	26,091.36
Administrative and General Expense	106,260.67	54,359.68	51,900.99	70,972.88	26,910.87	44,062.01
	$367,048.29	$110,487.17	$256,561.12	$312,698.11	$83,743.85	$228,954.26
Depreciation Expense	179,450.13	4,450.13	175,000.00	180,617.35	5,617.35	175,000.00
Taxes (Actually Paid)	7.826.26	3,919.08	3,907.18	6,021.06	1,542.31	4,478.75
Total Operating Revenue Deductions	$554,324.68	$118,856.38	$435,468.30	$499,336.52	$90,903.51	$408,433.01
Net Operating Revenues	1,831,745.49	*118,856.38*	1,950,601.87	1,804,916.60	*90,903.51*	1,895,820.11
Other Utility Operating Income	12,871.26	2,511.93	10,359.33	23,225.85	5,007.14	18,218.71
Total Utility Operating Income	$1,844,616.75	*$116,344.45*	$1,960,961.20	$1,828,142.45	*$85,896.37*	$1,914,038.82
Income Deductions						
Interest on Long Term Debt	3,031,502.49	2,409,341.49	622,161.00	3,085,694.49	2,440,488.99	645,205.50
Net Loss Transferred to Surplus	*$1,186,885.74*	*$2,525,685.94*	$1,338,800.20	*$1,257,552.04*	*$2,526,385.36*	$1,268,833.32

Italic figures denote loss and deficiency.

HETCH HETCHY WATER SUPPLY AND POWER PROJECT

CONSOLIDATED SURPLUS ACCOUNT

FOR THE TWELVE MONTHS ENDED JUNE 30, 1938

Balance, June 30, 1937			$38,548,072.46
Add:			
Net Earnings from Power Operations, Fiscal Year 1937-1938		$1,338,800.20	
Contributions from San Francisco Water Department—			
For Bond Interest and Redemption	$447,025.00		
For Additions and Betterment	8,061.46		
For Operating Expenses, Water Production	114,406.25	569,492.71	
Contribution from General Fund for Bond Interest and Redemption		2,574,232.59	
Bond Premium 1933 Hetch Hetchy Dam Bond Fund		137,438.55	
Federal Grants on Public Works Projects—			
Hetch Hetchy Dam and Moccasin Diversion Works		232,558.22	
Miscellaneous Additions to Surplus		2,991.96	
Total Additions to Surplus, 1937-38			4,855,514.23
			$43,403,586.69
Deduct:			
Net Loss from Water Production, Fiscal Year 1937-38		2,525,685.94	
Interest cost, San Lorenzo Pipeline transferred to San Francisco Water Department		13,446.25	
Retirement of Corral Hollow Pipeline		1,226,150.00	
California R. R. Commission Evaluation of P. G. & E. and G. W. P. Co.'s San Francisco Properties, 1924-1929		392,006.43	
Miscellaneous Deductions from Surplus		9,443.26	
Total Deductions from Surplus, 1937-38			4,166,731.88
			$39,236,854.81

Composition of Surplus, Cumulative to June 30, 1938

Additions to Surplus:			
Net Earnings from Power Operations, August 16, 1925 to June 30, 1938		$12,249,883.11	
Contributions from San Francisco Water Dept., July 1, 1935 to June 30, 1938—			
For Bond Interest and Redemption	$1,341,075.00		
For Additions and Betterments	21,958.02		
For Operating Expenses—Water Production	263,326.24	1,626,359.26	
Contribution from General Fund for Bond Interest and Redemption		33,676,339.12	
Interest Earned from Loans to Other Funds		77,801.23	
Bond Premiums, 1910-1932 Hetch Hetchy Bond Funds		1,240,169.26	
Bond Premium, 1933 Hetch Hetchy Dam Bond Fund		137,438.55	
Federal Grants on Public Works Projects		1,211,450.00	
Miscellaneous Additions to Surplus		3,333.86	
Total Additions to Surplus			$50,222,774.39
Deductions from Surplus:			
Net Loss from Water Projection, July 1, 1935 to June 30, 1938		7,564,111.51	
Bond Discount, 1910 Hetch Hetchy Bond Fund		737,956.39	
Cost of San Lorenzo Pipeline Transferred to San Francisco Water Department		1,063,840.76	
Retirement of Corral Hollow Pipeline		1,226,150.00	
California R. R. Commission Evaluation of P. G. & E. and G. W. P. Co.'s Properties, 1924-1929		392,006.43	
Miscellaneous Deductions from Surplus		1,854.49	
Total Deductions from Surplus			10,985,919.58
Surplus, June 30, 1938			$39,236,854.81

HETCH HETCHY WATER SUPPLY PROJECT

STATEMENT OF ANNUAL BOND REDEMPTION BY FISCAL YEARS

(Cash Basis)

Redemption Dates / Rate of Interest	July 1	July 1	January 1	July 1	June 1	December 1	
	Issue of						
	1909	1910	1925	1928	1932	1933	Total
2¾%	.....	.....	.....	.....	$324,000.00	.....	$324,000.00
3%	.....	.....	.....	.....	194,000.00	.....	194,000.00
4%	.....	.....	.....	.....	280,000.00	$3,500,000.00	3,780,000.00
4½%	$600,000.00	$45,000,000.00	.....	$24,000,000.00	143,000.00	.....	69,743,000.00
5%	.....	.....	$10,000,000.00	.....	1,234,000.00	.....	11,234,000.00
5¾%	.....	.....	.....	.....	4,325,000.00	.....	4,325,000.00
Total Issued	$600,000.00	$45,000,000.00	$10,000,000.00	$24,000,000.00	$6,500,000.00	$3,500,000.00	$89,600,000.00
Bonds Retired as of July 1, 1938..	$600,000.00	$19,000,000.00	$2,250,000.00	$600,000.00	.....	$700,000.00	$23,150,000.00
Annual Redemption Fiscal Year							
1938-39		$1,000,000.00	$250,000.00	$600,000.00	$200,000.00	$175,000.00	$2,225,000.00
1939-40		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1940-41		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1941-42		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1942-43		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1943-44		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1944-45		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1945-46		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1946-47		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1947-48		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1948-49		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00

1949-50		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1950-51		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1951-52		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1952-53		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1953-54		1,000,000.00	250,000.00	600,000.00	200,000.00	175,000.00	2,225,000.00
1954-55		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1955-56		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1956-57		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1957-58		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1958-59		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1959-60		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1960-61		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1961-62		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1962-63		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1963-64		1,000,000.00	250,000.00	600,000.00	200,000.00	.....	2,050,000.00
1964-65		.....	250,000.00	600,000.00	200,000.00	.....	1,050,000.00
1965-66		.....	250,000.00	600,000.00	200,000.00	.....	1,050,000.00
1966-67		.....	250,000.00	600,000.00	200,000.00	.....	1,050,000.00
1967-68		.....	250,000.00	600,000.00	200,000.00	.....	1,050,000.00
1968-69		.....	250,000.00	600,000.00	200,000.00	.....	1,050,000.00
1969-70		.....	.....	600,000.00	200,000.00	.....	800,000.00
1970-71		.....	.....	600,000.00	100,000.00	.....	700,000.00
1971-72		.....	.....	600,000.00	.....	.....	600,000.00
1972-73		.....	.....	600,000.00	.....	.....	600,000.00
1973-74		.....	.....	600,000.00	.....	.....	600,000.00
1974-75		.....	.....	600,000.00	.....	.....	600,000.00
1975-76		.....	.....	600,000.00	.....	.....	600,000.00
1976-77		.....	.....	600,000.00	.....	.....	600,000.00
Totals	$600,000.00	$45,000,000.00	$10,000,000.00	$24,000,000.00	$6,500,000.00	$3,500,000.00	$89,600,000.00

HETCH HETCHY WATER SUPPLY PROJECT

STATEMENT OF ANNUAL BOND INTEREST BY FISCAL YEARS

(Cash Basis)

Interest Maturity Dates	July 1 January 1	July 1 January 1	July 1 January 1	July 1 January 1	December 1 June 1	December 1 June 1	
Rate of Interest	Issue of						
	1909	1910	1925	1928	1932	1933	Total
2¾%	.....	.....	.....	.....	$324,000.00	.....	$324,000.00
3%	.....	.....	.....	.....	194,000.00	.....	194,000.00
4%	.....	.....	.....	.....	280,000.00	$3,500,000.00	3,780,000.00
4½%	$600,000.00	$45,000,000.00	.....	$24,000,000.00	143,000.00	.....	69,743,000.00
5%	.....	.....	$10,000,000.00	.....	1,234,000.00	.....	11,234,000.00
5¾%	.....	.....	.....	.....	4,325,000.00	.....	4,325,000.00
Total Issues	$600,000.00	$45,000,000.00	$10,000,000.00	$24,000,000.00	$6,500,000.00	$3,500,000.00	$89,600,000.00
Bond Interest Expense as of July 1, 1938	$72,900.00	$28,277,194.97	$5,149,277.69	$8,349,055.96	$1,922,897.57	$375,647.23	$44,146,973.42
Interest Fiscal Year							
1938-39		$1,170,000.00	$381,250.00	$1,053,000.00	$342,752.50	$108,500.00	$3,055,502.50
1939-40		1,125,000.00	368,750.00	1,026,000.00	331,585.00	101,500.00	2,952,835.00
1940-41		1,080,000.00	356,250.00	999,000.00	320,417.50	94,500.00	2,850,167.50
1941-42		1,035,000.00	343,750.00	972,000.00	309,440.00	87,500.00	2,747,690.00
1942-43		990,000.00	331,250.00	945,000.00	298,462.50	80,500.00	2,645,212.50
1943-44		945,000.00	318,750.00	918,000.00	287,485.00	73,500.00	2,542,735.00
1944-45		900,000.00	306,250.00	891,000.00	276,507.50	66,500.00	2,440,257.50
1945-46		855,000.00	293,750.00	864,000.00	265,530.00	59,500.00	2,337,780.00
1946-47		810,000.00	281,250.00	837,000.00	254,712.50	52,500.00	2,235,462.50
1947-48		765,000.00	268,750.00	810,000.00	243,895.00	45,500.00	2,133,145.00
1948-49		720,000.00	256,250.00	783,000.00	233,077.50	38,500.00	2,030,827.50

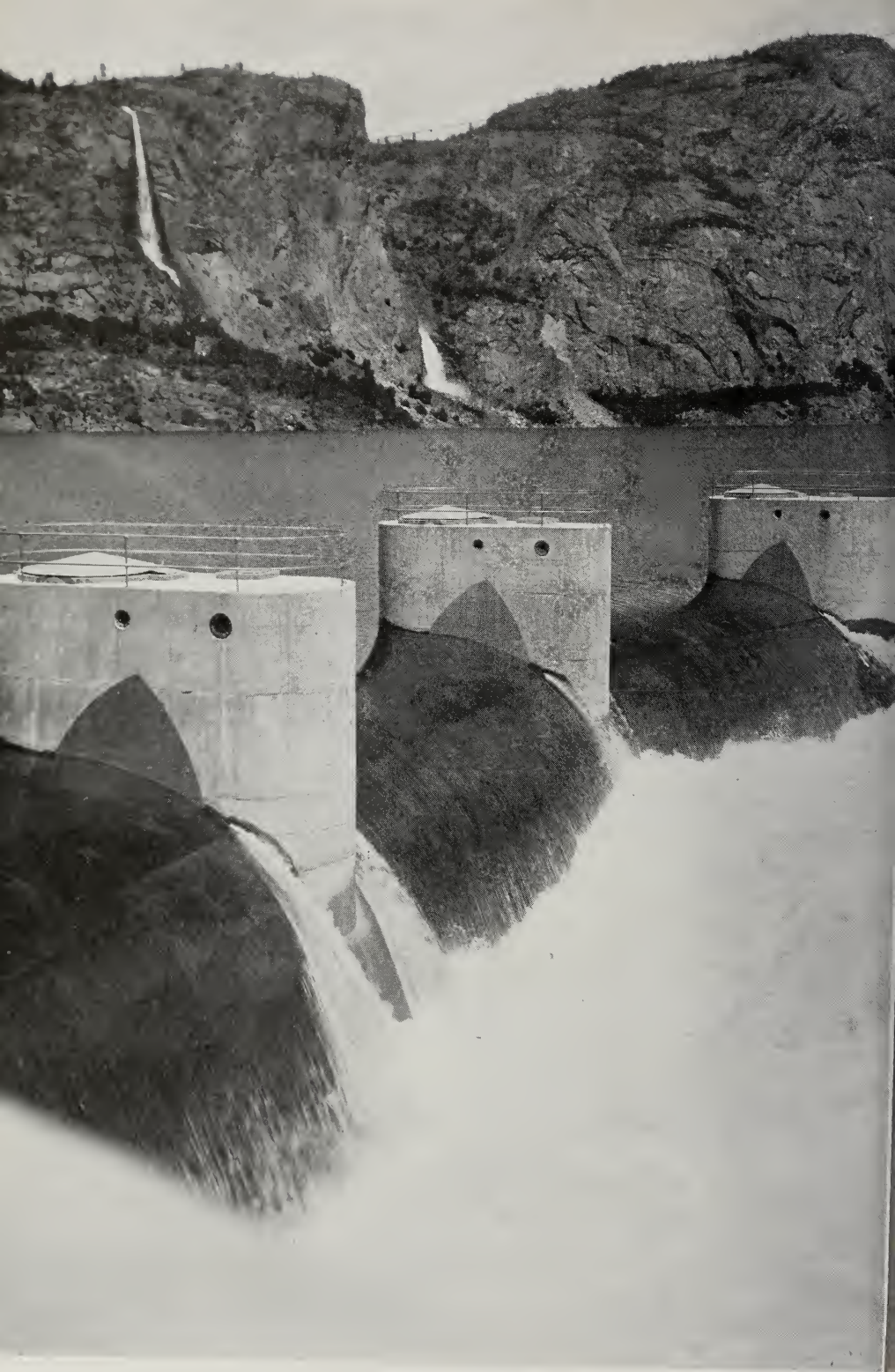
1949-50		675,000.00	243,750.00	756,000.00	222,260.00	31,500.00	1,928,510.00
1950-51		630,000.00	231,250.00	729,000.00	211,442.50	24,500.00	1,826,192.50
1951-52		585,000.00	218,750.00	702,000.00	200,625.00	17,500.00	1,723,875.00
1952-53		540,000.00	206,250.00	675,000.00	189,872.50	10,500.00	1,621,622.50
1953-54		495,000.00	193,750.00	648,000.00	179,120.00	3,500.00	1,519,370.00
1954-55		450,000.00	181,250.00	621,000.00	168,367.50	.....	1,420,617.50
1955-56		405,000.00	168,750.00	594,000.00	157,615.00	.....	1,325,365.00
1956-57		360,000.00	156,250.00	567,000.00	146,862.50	.....	1,230,112.50
1957-58		315,000.00	143,750.00	540,000.00	136,110.00	.....	1,134,860.00
1958-59		270,000.00	131,250.00	513,000.00	125,360.00	.....	1,039,610.00
1959-60		225,000.00	118,750.00	486,000.00	114,610.00	.....	944,360.00
1960-61		180,000.00	106,250.00	459,000.00	103,860.00	.....	849,110.00
1961-62		135,000.00	93,750.00	432,000.00	93,110.00	.....	753,860.00
1962-63		90,000.00	81,250.00	405,000.00	82,360.00	.....	658,610.00
1963-64		45,000.00	68,750.00	378,000.00	71,610.00	.....	563,360.00
1964-65		.....	56,250.00	351,000.00	61,377.50	.....	468,627.50
1965-66		.....	43,750.00	324,000.00	51,895.00	.....	419,645.00
1966-67		.....	31,250.00	297,000.00	42,412.50	.....	370,662.50
1967-68		.....	18,750.00	270,000.00	32,930.00	.....	321,680.00
1968-69		.....	6,250.00	243,000.00	23,447.50	.....	272,697.50
1969-70		.....	.....	216,000.00	13,965.00	.....	229,965.00
1970-71		.....	.....	189,000.00	4,482.50	.....	193,482.50
1971-72		.....	.....	162,000.00	.....	.....	162,000.00
1972-73		.....	.....	135,000.00	.....	.....	135,000.00
1973-74		.....	.....	108,000.00	.....	.....	108,000.00
1974-75		.....	.....	81,000.00	.....	.....	81,000.00
1975-76		.....	.....	54,000.00	.....	.....	54,000.00
1976-77		.....	.....	27,000.00	.....	.....	27,000.00
Totals	$72,900.00	$44,072,194.97	$11,155,527.69	$29,409,055.96	$7,520,457.57	$1,271,647.23	$93,501,783.42

PUBLIC UTILITIES COMMISSION
HETCH HETCHY WATER SUPPLY
ELECTRIC POWER BUREAU

AUTOMOTIVE EQUIPMENT OPERATIONS—COSTS AND CREDITS
NINE MONTHS PERIOD, OCTOBER 1, 1937, TO JUNE 30, 1938

Acct. No.	Car No.	Make and Model	1938 License No.	Mileage	Cost of Operation	Cost per Mile	Operating Credits	Present Rate Used for Credit	Excess of Costs Over Credits	Excess of Credits Over Costs	Revised Rate Sept. 1, 1938
7050	0	1929 Ford Coupe	20742	3,715	$74.89	.02016	$175.74	.04	.....	$100.85	.03
7052	1	1937 Dodge Coupe	20160	7,912	146.46	.01851	419.69	.05	.....	273.23	.03
7052	2	1937 Graham Coupe B. M.	20161	12,045	226.67	.01882	643.93	.05	.....	417.26	.03
7051	3	1936 Chevrolet Carryall	20163	8,295	595.12	.07174	414.78	.05	$180.34	.....	.07
7051	4	1936 Chevrolet Carryall	20162	7,755	530.77	.06844	387.75	.05	143.02	.....	.07
7051	5	1937 International Pickup	20164	4,643	343.52	.07399	272.43	.06	71.09	.....	.07
7051	6	1933 Dodge Truck	20165	2,910	312.97	.10755	194.63	.07	118.34	.....	.10
7051	7	1937 International Pickup	20166	5,570	175.07	.03143	334.20	.06	.....	159.13	.04
7051	8	1933 Plymouth Coach	20167	1,210	60.50	.05	52.79	.04	7.71	.....	.05
7051	9	1937 Chevrolet Sport Sedan	20168	9,475	264.64	.02793	412.60	.04	.....	147.96	.03
7051	10	1937 Ford Sedan	23039	8,903	267.41	.03004	383.42	.04	.....	116.01	.03
7050	11	1937 Ford Pickup ½ Ton	20169	17,117	407.73	.02382	855.85	.05	.....	448.12	.03
7050	12	1938 Ford Coupe	25173	20,641	327.57	.01587	893.38	.04	.....	565.81	.03
7050	13	1935 Ford Pickup ½ Ton	20743	9,583	242.37	.02529	479.15	.05	.....	236.78	.03
7051	14	1935 Ford Pickup ½ Ton	20170	1,696	88.25	.05203	85.21	.05	3.04	.....	.05
7052	15	1936 Chrysler Sedan	23001	10,583	497.75	.04703	701.44	.06	.....	203.69	.05
7050	16	1936 Packard Sedan	20700	12,480	661.02	.05297	940.72	.07	.....	279.70	.06
7050	17	1937 Ford Truck	20744	5,931	419.83	.07078	543.77	.08	.....	123.94	.07
7051	18	1937 International Pickup	20171	5,350	298.37	.05577	321.00	.06	.....	22.63	.06
7051	19	White Railroad Bus		220	242.98	1.10445	26.52	.13	216.46	.....	1.00
7051	21	White Railroad Bus		198	16.33	.08247	25.74	.13	.....	9.41	.10

7051	29	1922 Buda Railway Speeder		607	33.42	.05506	30.35	.05	3.07	.....	.06
7051	30	1922 Buda Railway Speeder		187	10.37	.05545	9.22	.05	1.15	.....	.06
7050	31	1937 Ford Coupe	20745	17,228	229.32	.01331	737.40	.04	.....	508.08	.03
7051	103	1920 White Truck ¾ Ton	20172	44	39.42	.8959	4.84	.08	34.58	.....	.90
7051	106	1920 White Truck ¾ Ton	20173	566	103.52	.18289	48.86	.08	54.66	.....	.18
7050	108	1920 White Truck 5 Ton	20746	1,626	254.70	.15664	503.30	.30	.....	248.60	.20
7051	109	1918 White ¾ Ton Stake Truck	20174	489	72.67	.14861	39.12	.08	33.55	.....	.15
7051	112	1938 Ford 1½ Dump Truck	25720	1,916	286.73	.14965	232.86	.13	53.87	.....	.15
7051	114	1937 Chevrolet Dump Truck	20175	2,760	271.17	.09825	323.28	.10	.....	52.11	.10
7050	120	1924 White Truck 2 Ton	20747	1,495	365.03	.24417	204.70	.13	160.33	.....	.25
7051	121	1924 White Truck 2 Ton Winch	20176	1,629	266.05	.16332	232.90	.13	33.15	.....	.17
7050	151	1929 Dodge Sedan	20749	7,990	148.40	.01857	437.74	.05	.....	289.34	.03
7050	160	1931 Ford Touring	20751	2,621	130.11	.04964	103.42	.04	26.69	.....	.05
7051	200	1936 F.W.D. Truck 4-5 Ton	20177	3,534	829.38	.23469	716.46	.19	112.92	.....	.24
7052	201	1938 F.W.D. 2½-3 Ton Line Truck	25665	397	201.95	.50869	44.07	.13	157.88	.....	.50
7052	202	1936 F.W.D. 1½ Ton Line Truck	20178	3,267	673.72	.20622	438.51	.13	235.21	.....	.21
7052	206	1933 Dodge Truck 1½ Ton	20179	1,975	152.57	.07725	245.32	.10	.....	92.75	.08
7050	208	1935 Ford Pickup ½ Ton	20752	8,131	187.56	.02307	406.55	.05	.....	218.99	.03
7050	209	1935 Ford Sedan	20753	5,033	218.27	.04337	226.44	.04	.....	8.17	.03
7051	1160	Caterpillar Tractor		480½ hrs.	360.10	.74942 hr.	960.50	2.00 hr.	.....	600.40	.75 hr.
7051	1170	Plymouth 8 Ton Locomotive		2,228	714.04	.32048	730.91	.30	.....	16.87	.35
7051	1171	Plymouth 20 Ton Locomotive		2,014	692.31	.34375	627.00	.30	65.31	.....	.35
7051	1172	P. & H. Shovel		214 hrs.	553.95	2.58855 hr.	428.00	2.00 hr.	125.95	.....	2.60 hr.
7051	1173	Rotary Snow Plow		128	325.03	2.53929	38.40	.30	286.63	.....	2.55
7051	1174	Caterpillar Tractor		614¼ hrs.	604.82	.98464 hr.	1,229.50	2.00 hr.	.....	624.68	1.00 hr.
7051	1176	Plymouth Locomotive		144	49.88	.34639	76.89	.30	.....	27.01	.35
					$13,974.71		$17,641.28		$2,124.95	$5,791.52	
							13,974.71			2,124.95	
							$3,666.57			$3,666.57	



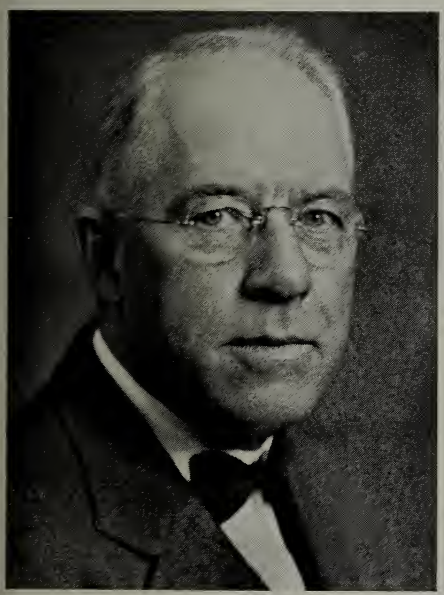
O'SHAUGHNESSY DAM SPILLWAY

Showing spill of approximately 10,000 cubic feet per second. Reservoir was filled to ultimate capacity shortly aft completion of spillway structure and Dam. This spillway will accommodate 30,000 cubic feet per second. Tuiala and Wapama Falls across Hetch Hetchy Reservoir in background.

ELECTRIC POWER BUREAU

HETCH HETCHY POWER OPERATION
STREET LIGHTING
GAS AND ELECTRIC POWER SUPPLY
RAPID TRANSIT
MUNICIPAL RAILWAY ENGINEERING

PAUL J. OST
Manager and Chief Engineer



PAUL J. OST
Chief Electrical Engineer

The following report covers the activities of the Electric Power Bureau which is charged with the operation of the Hetch Hetchy Power System, the lighting of streets, the purchase of gas and electricity for City Departments, all engineering for the Municipal Railway and miscellaneous matters connected with these activities. The report covers the major items of the year's work.

Special activities have been mass transportation, providing track facilities to the Bay Bridge Terminal, the question of disposing of Hetch Hetchy power in accordance with the interpretations placed upon the Raker Act, and the construction of new street lighting facilities on streets being widened or improved.

The Department is particularly fortunate in the men in charge of the various sections of the work, namely, L. M. Perrin, power and transportation; L. V. Degnan, Municipal Railway Engineering; Thornton Easler, Hetch Hetchy Power operation and A. O. Olson, lighting of streets and supplying of gas and electricity.

HETCH HETCHY POWER

Reservoirs

Precipitation in the Hetch Hetchy Water Shed during the fiscal year 1937-38 was the greatest in the history of rainfall records of this department, which began in 1910.

Storms of cloudburst proportions beginning in December, 1937, with a heavy fall of warm rain, rapidly melted the early snow and sent torrents of water, carrying great quantities of snags and debris, down into valleys and reservoirs. The cost of the cleanup of this storm exceeded that of any previous storm.

During the three days from 7 a. m. December 9 to 7 a. m. December 12, 1937, rainfall recorded was as follows:

Lake Eleanor	12.36 inches
O'Shaughnessy Dam	9.62 inches
Early Intake	8.32 inches
Moccasin	4.78 inches

The reservoir at Lake Eleanor, approximately one-seventh full at the beginning of the storm of December 9, filled and overflowed with two feet of water spilling over the crest of the dam, with all gates in the dam open. The water level in the reservoir rose thirty-three feet during the storm.

Lake Eleanor spilled from December 11 to December 28, 1937, refilled and started spilling on January 23, 1938, and was still spilling at the close of the fiscal year.

Hetch Hetchy Reservoir impounded in excess of 70,000 acre feet of water during the storm beginning December 9. The maximum inflow for one day averaged 26,032 cubic feet per second, and for six hours of this day (December 11) the inflow averaged 75,000 cubic feet per second. Without the O'Shaughnessy Dam this heavy flow would have passed down the Tuolumne River and into the San Joaquin adding greatly to the damage done by this storm.

These reservoirs, particularly Hetch Hetchy, in addition to assuring San Francisco of an ample supply of water for many years to come, are a distinct benefit to land owners along the lower Tuolumne and San Joaquin rivers by retarding flood waters from excessive rains and melting snow until the peak of the flood in the valleys had passed.

The retention of the heavy flow of the Tuolumne River in Hetch Hetchy reservoir during the period from early February to the end of June, 1938, during which time the San Joaquin River was at flood stage and 10,000 acres of farm lands were flooded, clearly show the great benefits to property in the lower valleys derived from the construction and maintenance of these reservoirs.

Hetch Hetchy Reservoir did not spill until May 29, 1938, the water level having been kept down by controlled releases up to that date. The maximum spill, which reached an average of 11,000 cubic feet per second, was recorded on June 3, and the reservoir was still spilling at the rate of 5,270 cubic second feet on June 30, 1938.

The water in storage on June 30th this year and last year, was as follows:

	Acre Feet	
	1938	1937
Hetch Hetchy Reservoir	348,015	184,272
Lake Eleanor	26,694	28,003
Priest Reservoir	837	1,342
	375,546	213,617

Increase 161,929 acre feet, or 75.8%.

At Priest Reservoir, under Contract No. 170, there was built for the reservoir keeper a cottage, and under Contract No. 175 the necessary sewage disposal system and a 10,000-gallon water supply tank connected with 5,400 feet of water pipe line to the penstock pipes at West Portal.

NIGHT VIEW STOCKTON STREET TUNNEL
New sodium vapor lighting and tile surface gives excellent illumination.

Early Intake Power House

The Early Intake Power House obtains its water from the Cherry Aqueduct. During the storm of December, 1937, the diversion dam at the entrance to the aqueduct was flooded to a depth of 13 feet and debris not only clogged the grizzly at the entrance to the tunnel but closed the tunnel, necessitating the removal of approximately 5,000 cubic yards of rock and sand. This was accomplished by removing an adit plug, installing temporary bulkheads and flushing out the small material, after which the remainder was mucked out and the large boulders carried down to the dam were blasted. The cast iron headgates were replaced with structural steel gates and the opening above the grizzly was closed to prevent a recurrence of similar trouble. The power house had to be shut down for a month while the tunnel was being cleaned.

At various times lightning has caused minor damage in the 22 kv. switchhouse which is to be replaced during the next fiscal year with an outdoor installation with more adequate protection against future lightning damage. Equipment formerly used at Seco Substation will be used.

Moccasin Power House

The high voltage bushings were tested by the Doble Engineering Company, using the dielectric loss method. Two defective bushings discovered by the test, were replaced.

Slate switchboard panels have been giving trouble by splitting where subject to the heat of indicating lamps. Some of the main control panels in the benchboard were replaced with panels of ebony asbestos. Similar trouble has been ex-

Plate A

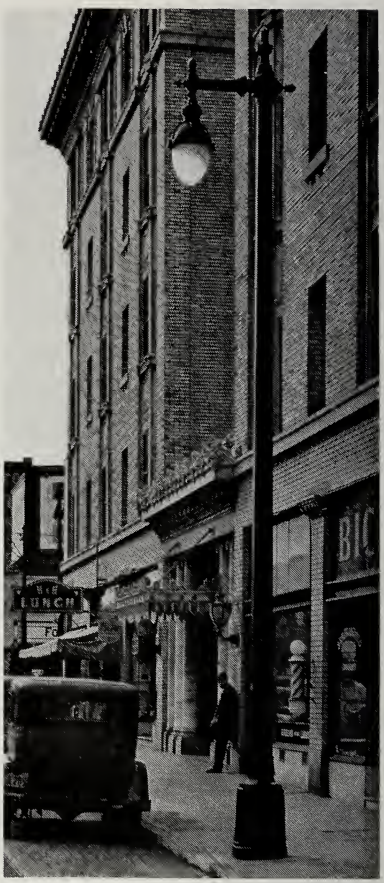


Plate B

TWENTY-FOOT PENDANT LIGHTING STANDARDS USED DOWNTOWN

perienced with the voltage regulator panels and an item was placed in the budget for the next fiscal year to replace these with regulators of modern type.

Eight new cottages and two garages were built with P. W. A. assistance. Termites were discovered in some of the cottages and corrective measures were taken. An air cooling system was installed in the offices in the clubhouse.

The Homestead valves used to control the hydraulic valves admitting water to the wheels had become badly worn and were replaced with 8 Nicholson 4-way valves.

Much painting and miscellaneous maintenance work was done.

At the time of the December storm, telephone communication with the Pacific Gas and Electric Company dispatchers' office and San Francisco, was cut off for a week, but the plant was operated satisfactorily through a code arrangement transmitted by speed or load variation.

Two lead covered cable potheads were replaced on the 11 kv. feeders because of trouble caused by entrance of moisture.

Transmission Lines

Storms caused more than normal damage to the 22 kv. pole line of the Mountain Division. Falling trees broke wires and some poles but no prolonged outage resulted. During the year 55 poles were replaced on the 22 kv. lines, 168 poles on the telephone lines, also 125 anchors were replaced.

On the 110 kv. lines some momentary outages were caused by lightning flashovers. All of the insulators on these lines were tested by the potential gradient method and many defective high strength units were found in the dead end strings. Replacements were made with 300 porcelain and 309 Pyrex glass insulators. This work is still in progress.

The first insulators were changed at night when the load was light enough to permit of taking a line out of service. This was abandoned in favor of working the line hot, using special tools developed for this purpose, which made it possible to do the work in daylight. This was found to be much more satisfactory, although it was the first time that this kind of replacement had been attempted on a 110,000 volt line in California.

Power Production

The output of Moccasin Power House was increased by the improved efficiency of the new buckets and nozzles installed just previous to this fiscal year. As the work of enlarging O'Shaughnessy Dam was completed during the year, the consumption of energy on the project was reduced, resulting in a decrease in the amount of power used on the Mountain Division. The following shows comparative figures for the last two fiscal years:

REPORT OF POWER PRODUCTION

Generated:	1937-38 kwh.	1936-37 kwh.	% of Change
Moccasin Power House	499,059,000	480,300,000	+ 3.90
Early Intake Power House	23,245,800	22,286,500	+ 4.30
Total Available	522,304,800	502,586,500	+ 3.92
Consigned to P. G. & E. Co.	485,169,600	465,012,000	+ 4.33
Used:			
At Power Houses	678,877	740,900	— 8.37
Mountain and Foothill Divisions	3,605,094	7,569,754	—52.38
Losses and Unaccounted for	32,851,229	29,263,846	+12.26
Total Energy	522,304,880	502,586,500	+ 3.92

POWER DISPOSAL

As stated in last year's report, the citizens on March 9, 1937, voted against the issuance of revenue bonds for the distribution of the electric output of the Hetch Hetchy Project by the City in San Francisco.

On April 27, 1937, the United States Attorney General filed suit in the United States District Court for the Northern District of California, seeking to enjoin

the City from continuing to deliver power to the Pacific Gas and Electric Company under the contract made in 1925. This action was taken because the Department of the Interior is of the opinion that the present contract does not meet the requirements of the Raker Act which gives San Francisco the right to use Government land in storing and transmitting the Hetch Hetchy water. Section 6 of this Act places restrictions on the disposal of the electricity generated as a by-product of water production. This case was handled in the courts by City Attorney John J. O'Toole and Special Counsel Dion Holm, assisted by Mr. Robert M. Searles, who was, for many years, attorney for the Hetch Hetchy Project and therefore conversant with all features of the grant.

On June 28, 1938, Judge Michael J. Roche decided in favor of the Government and allowed San Francisco six months, or until December 28, 1938, to rearrange its electric power business in such a way as to fully comply with his interpretation of the requirements of the Raker Act. The City Attorney plans to appeal the case in which case it is expected that Judge Roche's order will not be placed in effect on December 28, 1938. Cutting off the power revenue at that date would cause the City of San Francisco to suffer as the budget for the coming year is based on the receipt of annual Hetch Hetchy power revenue.

HETCH HETCHY POWER DIVISION

EXHIBIT B

COMPARATIVE INCOME STATEMENT

JUNE 30, 1938

REVENUES	1937-38 12 months 7/1 to 6/30	1936-37 12 months 7/1 to 6/30
Power Sales:		
Moccasin Power House:		
General Consumers	$8,717,976.55	$8,367,742.19
Less Distribution Commission	6,420,082.43	6,153,343.84
	$2,297,894.12	$2,214,398.35
Early Intake Power House:		
General Consumers	$69,293.12	$54,889.33
Construction, Operating and Miscellaneous	18,882.93	34,965.44
	$88,176.05	$89,854.77
Total Power Sales	2,386,070.17	2,304,253.12
Other Revenues:		
Interest Earned, Rents, etc.	10.359.33	18,218.71
Total Revenues	$2,396,429.50	$2,322,471.83
EXPENSES		
Operating Expenses:		
Exclusive of Depreciation:		
Production	$173,095.55	$158,800.89
Transmission	31,564.58	26,091.36
General and Miscellaneous	55.808.17	48,540.76
	$260,468.30	$233,433.01
Provision for Depreciation	175,000.00	175,000.00
Total Operating Expenses	$435,468.30	$408,433.01
Bond Interest	622,161.00	645,205.50
Total Expenses	$1,057,629.30	$1,053,638.51
Net Profit	$1,338,800.20	$1,268,833.32

Comparative Charges for Federal and State Taxes as required by Section No. 64 of the Charter:

1. Federal Income Tax; normal tax of from 8 to 15 per cent of net income.
2. Federal Income Tax; surtax on undistributed profits of from 7 to 27 per cent of undistributed adjusted net income.
3. Federal capital stock tax; $1.00 per $1,000.00 of declared value of capital stock.
4. Federal excess profits tax; 6 per cent of such portion of net income as is in excess of 10 per cent and not in excess of 15 per cent of declared value of capital stock; 12 per cent of such portion of net income as is in excess of 15 per cent of declared value of capital stock.
5. California state franchise tax; 4 per cent of net income.

EXHIBIT C

SURPLUS ACCOUNT

For the Twelve Months Ended June 30, 1938

Surplus June 30, 1937			$11,550,897.36
Add:			
Net Income for 12 months ended June 30, 1938.		1,338,800.20	
Miscellaneous additions to Surplus:			
Unexpended balance of contribution to H. H. W. S. for Additions and Betterments for Fiscal Year 1936-1937	$11,947.50		
Cancellation of Payroll Warrants issued in 1933-1934 and return of Retirement Contribution	227.12		
Return of Accumulated Surplus in Public Utilities Commission Fund	2,722.09	14,896.71	$12,904,594.27
Deduct:			
Contribution to Hetch Hetchy Water Supply for payment of bond interest and redemption		$950,826.00	
Contribution to Hetch Hetchy Water Supply for Additions and Betterments, 1937-38		6,816.07	
California R. R. Commission evaluation of P. G. & E. Co.'s and G. W. P. Co.'s San Francisco properties, 1924-1929		392,006.43	1,349,648.50
			$11,554,945.77

COMPOSITION OF SURPLUS

June 30, 1938

Additions:			
Initial surplus August 16, 1925, for bond interest and redemption and Construction: Contribution from Taxes and General Fund		$6,680,177.68	
Net Income August 16, 1925, to June 30, 1938		12,249,883.11	
Contributions from San Francisco Water Dept.		4,170.00	
Miscellaneous Additions to Surplus: Sale of bunk houses at South Fork	$100.00		
Airport engineering expenditures	130.28		
Cancellation of Payroll warrants issued in 1933-1934 and return of Retirement Contribution	227.12		
Return of Accumulated Surplus in Public Utilities Commission Fund	2,722.09	3,179.49	$18,937,410.28
Deductions:			
Contributions to Hetch Hetchy Water Supply for Bond Interest and Redemption and Construction		$6,971,050.11	
Contribution to Hetch Hetchy Water Supply Production Rents		10,000.00	
Contributions to Hetch Hetchy Water Supply for Additions and Betterments		9,407.97	
California R. R. Commission Evaluation of P. G. & E. and G. W. P. Co.'s San Francisco properties, 1924-1929		392,006.43	7,382,464.51
Surplus June 30, 1938			$11,554,945.77

EXHIBIT A

HETCH HETCHY POWER DIVISION

BALANCE SHEET—JUNE 30, 1938

ASSETS
PLANT, MATERIALS, CASH AND CREDITS HELD

PROPERTIES:	
The original cost of the portion of the Hetch Hetchy Project assigned to production and transmission of electricity	$26,153,486.27
Estimated reduction in value occasioned by aging and wear	1,782,613.31
Present value of properties	$24,370,872.96
CASH:	
There is deposited with the Treasurer of the City and County of San Francisco a total of $130,362.48; of which $20,055.08 is held for current operating expenses and $110,307.40 is in the Depreciation Fund for current reconstruction and replacements	130,362.48
CASH—OTHER:	
There is in transit to the Treasurer $458.88 which has been deducted from employees on the payrolls for the period ending June 30, 1938, for meals, etc., and there is $3,000.00 in a revolving fund used to expedite the payment of small charges	3,458.88
ACCOUNTS RECEIVABLE:	
Sum owed to the Hetch Hetchy Power Division for electric energy furnished during the month of June, 1938; of this $200,105.37 is due from the Pacific Gas & Electric Co., and the balance $1,826.00, from miscellaneous consumers	201,931.37
INTERFUND ACCOUNTS RECEIVABLE:	
Sum owed to the Hetch Hetchy Power Division by other City Departments for electric energy and work performed	141,829.11
MATERIALS AND SUPPLIES:	
This is the cost of materials and supplies in stock	18,660.69
PREPAYMENTS:	
These consist of $2,500.00 advanced to the Public Utilities Commission on account of valuation for depreciation purposes and $7,591.30 advanced to the Hetch Hetchy Water Supply for work it has not yet completed	10,091.30
DEFERRED DEBITS:	
These are cash or credit items advanced for work under way and for accounts held in suspense for later distribution to proper permanent accounts when necessary data is available. It also covers material orders issued and other commitments for which there are balancing items included in deferred credits	53,076.83
Total Properties, Cash and Credits available for power production and the maintenance and betterment of the Hetch Hetchy Power Division	$24,930,283.62

LIABILITIES
INDEBTEDNESS AND EQUITY

BONDED DEBT:	
The remaining 1910 Hetch Hetchy Bonds allocated to power which have not yet been retired. Retirements are being made at the rate $512,100.00 per year from Hetch Hetchy Power earnings	$13,313,700.00
ACCOUNTS PAYABLE:	
This is money owing for materials, etc.	8,264.53
INTERFUND ACCOUNTS PAYABLE:	
This is money owed to other City Departments for services rendered or work performed	27,056.93
DEFERRED CREDITS:	
This is cash received for specific purposes and not yet paid out and covers other liabilities such as orders issued for materials and similar encumbrances balanced by items in Deferred Debits	26,316.39
Total indebtedness of Hetch Hetchy Power Division for outstanding bonds and miscellaneous accounts	$13,375,337.85
SURPLUS, JUNE 30, 1938:	
This is the Hetch Hetchy Power Division's equity in the plant and property assigned to it for production and transmission of electricity. This equity has been purchased out of power earnings	11,554,945.77
Total of indebtedness and equity balancing total properties, etc.	$24,930,283.62

EXHIBIT D

HETCH HETCHY POWER DIVISION

DETAIL OF OPERATING EXPENSES
JUNE 30, 1938

	PRODUCTION	1937-38 12 Months 7/1 to 6/30	1936-37 12 Months 7/1 to 6/30
	OPERATION:		
6000	Superintendence	$8,838.12	$13,735.82
6005	Hydraulic Labor	12,531.72	11,391.14
6010	Station Labor	45,414.78	44,543.76
6015	Miscellaneous Labor	5,697.52	9,690.45
6020	Supplies and Expenses	15,484.65	16,066.99
6030	Contributions to Retirement System	2,675.81	3,044.04
6035	Compensation Insurance	2.809.60	.....
		$93,452.20	$98,472.20
	MAINTENANCE:		
6050	Structures	$23,140.84	$16,720.10
6055	Reservoirs, Dams and Intakes	4,637.40	3,663.03
6060	Waterways	11,950.18	2,724.28
6065	Forebays, Penstocks and Tailraces	4,638.55	487.71
6070	Roads and Trails	6,933.47	6,646.98
6075	Hydraulic Power Plant Equipment	5,308.70	1,308.48
6080	Miscellaneous Power Plant Equipment	4,335.70	4,616.32
		$60,944.84	$36,166.90
	MISCELLANEOUS:		
6090	Production Rents	$10,000.00	$18,000.00
6092	Communication System	7,808.90	5,703.33
6093	Fire Fighting and Patrol	.....	22.47
6094	Hydrography	889.61	435.99
		$18,698.51	$24,161.79
	TOTAL PRODUCTION EXPENSE	$173,095.55	$158,800.89

	TRANSMISSION	1937-38 12 Months 7/1 to 6/30	1936-37 12 Months 7/1 to 6/30
	OPERATION:		
6200	Superintendence	$3,259.28	$3,640.14
6210	Substation Supplies and Expense	....	20.05
6215	Transmission Lines Labor	9,162.23	8,759.68
6220	Transmission Lines Supplies & Expense	2,048.33	1,553.77
6225	Contribution to Retirement System	482.61	452.08
		$14,952.45	$14,425.72
	MAINTENANCE:		
6250	Transmission Structures	$113.19	$1.94
6255	Substation Equipment	4,354.83	1,967.37
6260	Towers and Fixtures	86.58	442.05
6265	Tower Line Conductors	2,746.99	1,101.44
6270	Poles and Fixtures	7,632.36	4,524.14
6275	Pole Line Conductors	230.29	1,198.56
6280	Roads and Trails	1,337.13	706.37
6285	Miscellaneous	80.76	1,693.77
		$16,582.13	$11,635.64
	MISCELLANEOUS:		
6290	Transmission Rents	$30.00	$30.00
	Total Transmission Expense	$31,564.58	$26,091.36
	ADMINISTRATIVE AND GENERAL:		
8000	Salaries and Wages	$9,812.06	$9,941.45
8005	Contributions to Retirement System	462.51	502.37
8010	Services of Other Departments	31,113.57	25,680.66
8015	Professional Services	1,415.00	2,815.74
8020	Stationery, Office Supplies and Postage	469.01	289.66
8025	Telephone and Telegraph	105.45	145.39
8030	Traveling	328.73	66.18
8040	Injuries and Damages	145.03	467.22
8051	Automobile Insurance Premiums	639.61	1,025.87
8061	Raker Act Litigation	5,335.42	.....
8095	Miscellaneous	.....	225.00
8096	Maintenance of Automotive Equipment	2,074.60	2,902.47
		$51,900.99	$44,062.01
	FIXED CHARGES:		
9020	Taxes (Actually Paid)	$3,907.18	$4,478.75
	TOTAL ADMINISTRATIVE AND GENERAL	$55,808.17	$48,540.76

SCHEDULE No. 1

HETCH HETCHY POWER DIVISION

ACCOUNT 1000—FIXED CAPITAL IN SERVICE
JULY 1, 1937 TO JUNE 30, 1938

		Balance June 30, 1937	Gross Additions July 1, 1937- June 30, 1938	Retirements July 1, 1937- June 30, 1938	Adjustments July 1, 1937- June 30, 1938	Balance June 30, 1938
312	Hydraulic Power Plant Land	$895,699.15	.....	.....	.....	$895,699.15
313	Hydraulic Power Plant Structures	1,360,680.11	$6,641.91	$4,436.17	$22.82	1,362,908.67
314	Reservoirs, Dams and Intakes	6,035,265.82	465.76	465.76	.....	6,035,265.82
316	Waterways	6,790,219.36	.....	.....	.....	6,790,219.36
317	Forebays, Penstocks and Tailraces	2,625,825.49	567.37	567.37	.....	2,625,825.49
318	Production Roads and Trails	554,698.37	.....	.....	.....	554,698.37
319–1	Hydraulic Power Plant Equipment—Water Turbines and Water Wheels	437,592.64	2,965.42	1,077.42	.....	439,480.64
319–2	Hydraulic Power Plant Equipment—Electrical	714,887.82	.....	.....	.....	714,887.82
319–4	Hydraulic Power Plant Equipment—Other Powerhouse Equipment	567.24	.....	.....	.....	567.24
323	Miscellaneous Power Plant Equipment	24,565.35	.....	1,101.88	.....	23,463.47
331	Transmission Lands	139,263.47	.....	.....	.....	139,263.47
332	Transmission Structures	64,904.35	107.35	107.35	.....	64,904.35
333	Transmission Substation Equipment	270,894.52	2,430.55	2,430.55	.....	270,894.52
334	Transmission Towers and Fixtures	760,476.32	.....	.....	.....	760,476.32
335	Transmission Tower Line Conductors	933,355.00	.....	.....	.....	933,355.00
336	Transmission Poles and Fixtures	8,097.81	1,249.61	1,249.61	.....	8,097.81
337	Transmission Pole Line Conductors	2,235.99	.....	.....	.....	2,235.99
340	Transmission Roads and Trails	1,249.58	.....	.....	.....	1,249.58
341	Miscellaneous Transmission Capital	84.38	.....	.....	.....	84.38
344	Distribution Substation Equipment	386.69	.....	.....	.....	386.69
346	Distribution Poles, Towers and Fixtures	120.10	.....	.....	.....	120.10
347	Distribution Overhead Conductors	228.49	.....	.....	.....	228.49
352	Consumers' Meters	212.47	.....	.....	.....	212.47
362	General Office Equipment	1,780.11	1,286.17	.....	.....	3,066.28
366–1	Other General Structures—General Shop Structures	23,178.61	980.54	980.54	.....	23,178.61
366–2	Other General Structures—Store Department Structures	22,284.49	.....	.....	.....	22,284.49
366–3	Other General Structures—Transportation Department Structures	4,543.15	.....	.....	.....	4,543.15
367	General Shop Equipment	24,553.85	226.79	.....	.....	24,780.64
372	Stores Department Equipment	1,361.39	.....	.....	.....	1,361.39
377	Transportation Department Equipment	59,063.64	15,365.71	8,431.19	.....	65,998.16
382	Communication System Equipment	18,042.11	1,236.52	1,236.52	.....	18,042.11
387	Miscellaneous Equipment	5,935.74	334.14	.....	.....	6,269.88
389	General Construction Equipment	1,870.02	.....	.....	.....	1,870.02
390	Engineering and Superintendence During Construction	403,617.24	.....	.....	.....	403,617.24
391	Law Expenses During Construction	103,118.92	.....	.....	.....	103,118.92
392	Injuries and Damages During Construction	2,340.34	.....	.....	.....	2,340.34
393	Taxes During Construction	27,959.29	.....	.....	.....	27,959.29
394	Interest During Construction	3,491,855.47	.....	.....	.....	3,491,855.47
395	Miscellaneous Construction—General Officers and Clerks	184,914.73	.....	.....	.....	184,914.73
397	Fixed Capital not classified by prescribed accounts	143,783.17	.....	.....	*22.82*	143,760.35
		$26,141,712.79	$33,857.84	$22,084.36	.....	$26,153,486.27

SCHEDULE No. 5

HETCH HETCHY POWER DIVISION
JUNE 30, 1938

COMPARATIVE INCOME STATEMENT

Fiscal Year Ended June 30, 1937 and June 30, 1938, and Period August 16, 1925 to June 30, 1938

REVENUE	Fiscal Year Ended June 30, 1938	Fiscal Year Ended June 30, 1937	Period August 16, 1925 to June 30, 1938
Power Sales:			
Moccasin Power Sales			
General Consumers	$8,717,976.55	$8,367,742.19	$101,379,442.60
Less Distribution Commission	6,420,082.43	6,153,343.84	74,193,433.82
	$2,297,894.12	$2,214,398.35	$27,186,008.78
Water Supply for Construction	.....	.....	604,987.66
	$2,297,894.12	$2,214,398.35	$27,790,996.44
Early Intake Powerhouse			
Other Electric Corporations	69,293.12	54,889.33	665,634.94
General Consumers	18,882.93	34,965.44	83,495.10
	$88,176.05	$89,854.77	$749,130.04
Water Supply for Construction	.....	.....	199.79
	$88,176.05	$89,854.77	$749,329.83
Total Power Sales	$2,386,070.17	$2,304,253.12	$28,540,326.27
Other Revenues			
Interest Earned, Rents, etc.	10,359.33	18,218.71	445,039.84
Total Revenues	$2,396,429.50	$2,322,471.83	$28,985,366.11
EXPENSES			
Operating Expenses			
Exclusive of Depreciation:			
Production	$173,095.55	$158,800.89	$2,299,400.78
Transmission	31,564.58	26,091.36	338,162.34
General and Miscellaneous	55,808.17	48,540.76	727,437.88
	$260,468.30	$233,433.01	$3,365,001.00
Allowance for Depreciation	175,000.00	175,000.00	2,245,833.00
	$435,468.30	$408,433.01	$5,610,834.00
Bond Interest	622,161.00	645,205.50	9,821,948.62
Amortization of Bond Discount	.....	.....	1,302,700.38
Total Expenses	$1,057,629.30	$1,053,638.51	$16,735,483.00
Net Profit Transferred to Surplus	$1,338,800.20	$1,268,833.32	$12,249,883.11

LIGHTING OF STREETS AND PUBLIC BUILDINGS

During the 1937-38 fiscal year, the City expended, exclusive of funds for energy used on City sponsored W. P. A. projects, and the Public Welfare Department, a total of $1,616,270.38 for gas and electricity used for municipal purposes and for street lighting maintenance. These expenditures were made up of the following items:

Gas for heat and power	$108,937.26	
Electricity for light and power	779,448.93	
	$888,386.19	
Less credits and adjustments	5,391.28	
Net Gas and Electricity		$882,994.91
Street lighting by contract	$708,738.03	
Maintenance work not covered by contract	2,195.57	
Pole space rentals	804.00	
Total Street Lighting		711,737.60
Administration		21,537.87
Total expenditures for Street and Building Lighting...		$1,616,270.38

These expenditures are shown graphically on page number 185.

Gas and Electric Supply

A break down of the $882,994.91 expended for municipal heat, light, and power, in the form of gas and electricity, is shown on Table No. 1. In this table the amount of the commodity used by each department as well as the cost thereof, has been shown.

Through an annual contract entered into with the Pacific Gas and Electric Company the department purchased for the account of each department of the City, whatever amount of these commodities was required for the normal function of the department. In the contract bid for 1937-38 the Pacific Gas and Electric Company, who was the only bidder, quoted besides the regular Railroad Commission's published schedules for gas and electricity, a flat rate per kw-hr. for electricity, delivered within the city limits, of two cents for power and two and three-quarter cents for light. The option of applying published schedules or flat rates to any account within the City limits, rested with this department.

Analysis of rate schedules and energy consumption for each of the 700 electric accounts, disclosed that energy could be bought cheapest on flat rate through 555 accounts.

The Company submitted monthly bills for the 700 electric and 365 gas accounts. Each bill was checked and posted monthly and all accounts were checked periodically to ascertain the most advantageous rate schedule applicable. In accordance with an agreement with the Company, any account may be adjusted during the fiscal year by applying a different rate, should it be to the City's advantage. Bill adjustments thus made at the department's request on 23 accounts amounted to $5,323.45 in favor of the various departments. Besides these credits, refunds of $26.80 for meter errors and $41.03 for billing errors were received from the Company.

Plate C

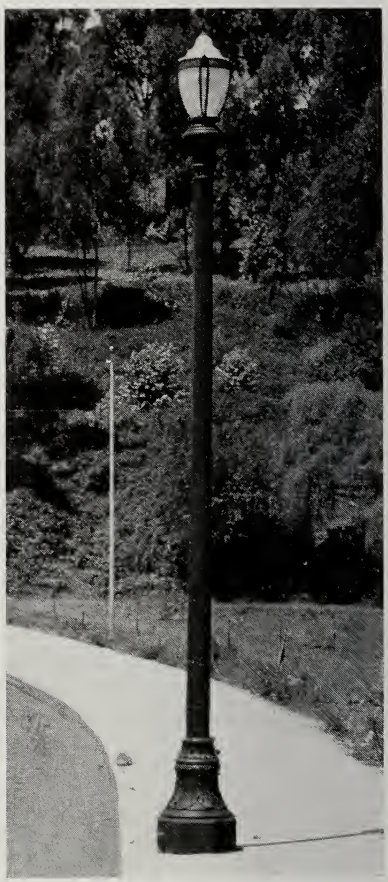


Plate D

TWENTY-FOOT BOULEVARD LIGHTING STANDARDS

COMPARISON OF ESTIMATED AND ACTUAL REVENUES
Fiscal Year 1937-1938

	Estimated July 1, 1937 June 30, 1938	Actual July 1, 1937 June 30, 1938	Increase or Decrease
Early Intake Powerhouse	$90,000.00	$88,176.05	*$1,823.95*
Moccasin Powerhouse	2,310,000.00	2,297,894.12	*12,105.88*
Rent from Property	5,000.00	5,254.34	254.34
Sale of Water	400.00	614.57	214.57
Meal Receipts	5,500.00	4,271.88	*1,228.12*
Miscellaneous Receipts	100.00	218.54	118.54
	$2,411,000.00	$2,396,429.50	*$14,570.50*

Italic figures denote loss and deficiency.

Plate E

Plate F

SIXTEEN-FOOT LIGHTING STANDARDS USED IN RESIDENTIAL DISTRICTS

Effective February 1, 1937, the Pacific Gas and Electric Company reduced its electric rates. Because of this reduction, 91 accounts were shifted from flat rate to published schedules, resulting in an annual saving of $8,780.00.

The gas rates were likewise reduced on April 1, 1938. During the three months that these lower rates were in effect, a cost reduction equal to $2,680.00 per year was evidenced in 358 accounts to which the new schedules applied. Due to the increased surplus gas rate, which fluctuates with the price of oil, an increased cost of $6,170.00 was incurred by the five accounts billed on this schedule.

The monthly gas and electric bills for the W. P. A. projects sponsored by the City, were checked by the department. As a result of this procedure $1,193.32 was saved by the City, in lower rates applied at the request of the department on a total expenditure of $10,823.86.

TABLE No. 1

DEPARTMENTAL GAS AND ELECTRICITY CONSUMPTION AND EXPENDITURES 1937-38

CONSUMPTION					EXPENDITURES					
Electricity		Gas						Miscel. Credits	Inter-Dept.	
No. of Accts.	Kw. hrs.	No. of Accts.	Cubic Feet	Department	Gas	Electricity	Total	& Adjm'ts	Transfers	Total
4	243,140	3	2,879,200	Airport	$1,271.92	$6,030.00	$7,301.92	.....	.....	$7,301.92
7	399,780	1	11,800	Auditorium	15.66	7,456.54	7,472.20	.....	—$1,617.84	5,854.36
3	56,174	1	328,900	Detention Home	195.24	1,329.75	1,524.99	.....	.....	1,524.99
4	63,324	..	.....	De Young Museum	.....	1,415.80	1,415.80	—$10.96	.....	1,404.84
5	58,345	3	772,700	Department of Electricity	425.89	1,252.52	1,678.41	— .41	.....	1,678.00
63	399,620	96	20,353,700	Fire	10,974.15	10,755.46	21,729.61	.....	.....	21,729.61
				Department of Public Health:						
4	154,680	..	.....	Hassler Home	.....	3,020.32	3,020.32	.....	.....	3,020.32
4	216,690	1	9,600	Central Offices	14.13	4,184.43	4,198.56	.....	.....	4,198.56
6	49,939	6	1,393,200	Emergency Hospitals	682.13	1,297.37	1,979.50	— 4.22	.....	1,975.28
2	164,030	4	130,590,600	Laguna Honda Home	23,549.54	3,404.80	26,954.34	.....	.....	26,954.34
3	65,869	3	177,530,300	San Francisco Hospital	32,220.06	2,037.38	34,257.44	.....	.....	34,257.44
3	2,751	3	178,400	Field Nursing	136.77	75.72	212.49	.....	.....	212.49
5	123,738	..	.....	Legion of Honor	.....	2,485.34	2,485.34	.....	.....	2,485.34
26	532,897	23	2,892,600	Library	1,614.94	11,097.34	12,712.28	.....	.....	12,712.28
12	40,853,347	3	1,064,400	Municipal Railway	522.46	465,105.71	465,628.17	.....	.....	465,628.17
79	2,539,847	20	12,133,700	Park	3,491.34	40,607.70	44,099.04	—747.40	+1,419.64	44,771.28
64	239,767	19	3,521,700	Police	2,006.87	10,768.61	12,775.48	.....	+ 336.63	13,112.11
				Department of Public Works:						
2	14,996	..	.....	General	.....	412.42	412.42	.....	.....	412.42
4	53,507	..	.....	Asphalt Plant	.....	1,104.13	1,104.13	.....	.....	1,104.13
12	84,110	..	.....	Drawbridges	.....	2,085.39	2,085.39	— 22.17	.....	2,063.22
..	.....	1	45,700	Engineering	38.75	.....	38.75	.....	.....	38.75
2	9,542	1	363,400	Building Repair	206.40	262.16	468.56	.....	.....	468.56
3	3,311	2	3,700	Street Cleaning	19.83	91.14	110.97	.....	.....	110.97
10	175,061	..	.....	Sewage Pumps	.....	3,545.51	3,545.51	.....	.....	3,545.51
9	126,190	4	1,032,000	Purchasing Department	556.94	2,838.51	3,395.45	.....	.....	3,395.45
10	1,557,525	..	.....	Public Buildings	.....	26,431.04	26,431.04	.....	+1,617.84	28,048.88
51	185,192	24	1,676,600	Recreation	1,226.15	4,736.11	5,962.26	— 29.12	.....	5,933.14
3	9,371	2	5,900	Registrar of Voters	18.78	257.73	276.51	.....	.....	276.51
238	2,598,479	129	11,666,200	Schools	7,805.01	61,712.49	69,517.50	—1,978.32	.....	67,539.18
3	538,040	3	26,806,100	Sheriff	5,978.62	10,756.39	16,735.01	+ 3.84	—1,756.27	14,982.58
4	1,042,640	3	9,078,700	War Memorial	3,388.68	18,646.02	22,034.70	—1,152.80	.....	20,881.90
				Water Department:						
27	546,298	4	56,305,300	San Francisco Division	11,650.45	12,105.23	23,755.68	— 49.43	.....	23,706.25
13	6,727,589	5	1,584,200	San Mateo Division	811.47	56,086.32	56,897.79	— 4.79	.....	56,893.00
13	220,894	1	107,200	Alameda Division	115.08	5,371.96	5,487.04	—1,395.50	.....	4,091.54
2	18,616	..	.....	San Joaquin Division	.....	681.59	681.59	.....	.....	681.59
700	60,175,299	365	462,335,800		$108,937.26	$779,448.93	$888,386.19	—$5,391.28	.....	$882,994.91

NOTE: Miscellaneous Credits and Adjustments are deductions from total billing and are of three classes:
1. Due to meter inaccuracy, $26.80.
2. Due to billing errors, $41.03.
3. Due to changing schedules for lowest possible rates, $5,323.45.

TABLE No. 2

PURCHASE OF ELECTRICITY BY SCHEDULES 1937-38

For Lighting and Miscellaneous Use

Schedule	Number of Accounts	Kw hr. Used	Cost	Average Cost per kw hr.
$.0275	355	1,629,771	$44,828.52	2.750¢
L-1	41	1,927,808	45,174.70	2.343
L-3	17	239,936	9,050.72	3.772
L-6	1	766,000	14,249.20	1.860
L-9	4	115,342	1,645.54	1.427
L-14	1	244	15.61	6.398
C-4	7	2,508,530	41,859.23	1.669
C-7	1	242,400	5,920.39	2.442
D-1	5	50,323	743.12	1.477
D-W	1	14,856	188.04	1.266
D-3	8	34,939	830.43	2.377
Total	441	7,530,149	$164,505.50	2.185¢

For Power

$.02	200	1,778,426	$35,533.72	2.000¢
P-1	7	75,128	1,408.12	1.874
P-2	1	10	40.03	....
P-3-13	8	1,464,014	19,863.44	1.357
P-4	1	510	56.67	11.111
P-7	2	208,440	5,013.00	2.405
P-9	1	40,672,080	461,788.36	1.135
P-15	13	1,553,430	24,117.28	1.553
P-17	2	118,268	2,233.95	1.889
P-30	1	6,528,000	50,287.10	.770
C-1	9	240,124	3,206.00	1.335
Total	245	52,638,430	$603,547.67	1.147¢
Special	14	6,720	6,037.32	....

Summary

Lighting	441	7,530,149	$164,505.50	2.185¢
Power	245	52,638,430	603,547.67	1.147
Traffic Control	14	6,720	6,037.32	....
Electrical Total	700	60,175,299	$774,090.49	1.286¢

TABLE No. 3

PURCHASE OF GAS BY SCHEDULES 1937-38

For General Use

Schedule	Number of Accounts	Cu. Ft. Used	Cost	Cost per Cubic Ft.
G-1	286	31,978,400	$19,941.21	6.236¢
G-2	7	2,328,300	1,358.03	5.833
G-7	1	107,200	115.08	10.735
Total	294	34,413,900	$21,414.32	6.223¢

General Heating

GH-1	62	39,455,000	$17,773.23	4.505¢
GH-2	2	2,803,900	1,085.39	3.871
Total	64	42,258,900	$18,858.62	4.463¢

For Special Heat and Power

GS-1	5	385,663,000	$68,350.57	1.772¢
Special	2	.....	280.91	....
Total	7	385,663,000	$68,631.48	....

Summary

General Use	294	34,413,900	$21,414.32	6.223¢
General Heating	64	42,258,900	18,858.62	4.463
Special Heat and Power	5	385,663,000	68,350.57	1.772
Lamp Rentals	2	.....	280.91	....
Total Gas	365	462,335,800 cu. ft.	$108,904.42	2.356¢
Total Electric	700	60,175,299 kw-hr	774,090.49	1.286
Total Gas and Electric	1,065	.....	$882,994.91	....

The technical requirements of electric and gas rate schedules often make it necessary to alter services and rearrange equipment on City property in order to make the lower rate schedules applicable. The following work of this nature was completed during the past year:

	Investment Cost	Annual Saving
Health Center Building	$ 60	$ 543
High School of Commerce	450	980
War Memorial	85	1,106
Water Department Building	595	286

The following work of a similar nature is in progress and should be completed in the early part of next year:

City Hall	$5,500	$3,700
Main Library	1,150	550
County Jail No. 2	325	350

In the design of the improvements to the San Francisco Airport, this department proposed the installation of a primary service and the elimination of 27 accounts then in effect. It was estimated that the cost of this work would be $1,100 and would result in a saving of $1,000 annually. The entire Airport has been on primary service since August, 1937, and the operating cost during the eleven months under the new system has been reduced by $1,106.

A report covering a very comprehensive test on 12 pumps, aggregating 1,025 H.P. used for irrigation water supply in Golden Gate Park, was submitted to the

Plate G
TWENTY-FOOT PENDANT LIGHTING
FOR SECONDARY STREETS

Park Commission. Recommendations in operating practice and maintenance of equipment were made that would reduce the electric energy cost by $4,060 per year.

Street Lighting

The trend of street lighting operating cost in previous years has been downward, though the number of lights maintained in the City's streets has been increased from year to year. The past year marked a reversal of this trend. For the first time since the Public Utilities Commission assumed the responsibility of lighting the City's streets, the average cost per light per year, as well as the total annual cost of street lighting, has exceeded the previous cost. This condition was partially due to the fact that the midnight burning lights of the "Path of Gold" on Market Street were lighted during the entire year, whereas during previous years these lights had been lighted only part of the time. Another cause for the increased cost is that the department, lacking funds for street lighting construction, has been obliged to order the Pacific Gas and Electric Company to install new lights on reconstructed streets, whereas in the past years, funds have been available for the installation of City-owned lights. Fixed charges make the rates for Company-owned lights approximately 75% higher than the rates for City-owned lights.

Details of street lighting expenditures are shown on Table No. 4. Yearly street lighting cost and other pertinent data since 1932, is shown on Table No. 5.

The street construction activities carried on by the Department of Public Works and the W.P.A. during the 1936-37 fiscal year, were continued during the past year. The reconstruction of old streets and the opening of new streets has necessitated the installation of a considerable number of new lights to properly care for the changing traffic conditions.

During the year 1,376 lights were installed and 574 removed, making a net increase of 802 or a total of 21,378 lights in service at the end of the year. Of these 1,376 lights, 439 were installed in connection with street improvement projects and paid for with City funds, while 38 lights were installed by adjacent property owners and deeded to the City. The remaining 899 lights were installed by the Pacific Gas and Electric Company. Table No. 6 shows in detail the location of and expenditures for the City-owned lights installed during the year.

TABLE No. 4
COST OF STREET LIGHTING OPERATION, 1937-38

Contractual Services:		
Gross Street Lighting Expenses		$724,333.54
Less: Market Street Railway Portion	$12,576.00	
Outages	3,019.51	15,595.51
Net Street Lighting		708,738.03
Replacements and Repairs:		
Replacements and Repairs	2,522.75	
Less: Collections for damages	327.18	
Net Replacements and Repairs		2,195.57
Pole Space Rentals		804.00
Total Street Lighting Expenditures		$711,737.60

TABLE No. 5
TABULATION OF STREET LIGHTING EXPENDITURES, 1932-1938

Fiscal Year	Amount of Appropriation	No. Lights at Close of Year	ACTUAL EXPENDITURES Total	Per Cent of Taxes	Per Capita	Average Cost Per Lamp Per Year	Construction
1931-32....	$865,000.00	19,500	$855,289.34	...	$1.28	$43.86	.....
1932-33....	850,000.00	17,369	762,933.84	3.10	1.12	43.93	.....
1933-34....	780,000.00	18,115	696,126.56	2.48	1.00	38.43	$52,421.00
1934-35....	766,000.00	20,383	698,701.94	2.32	.98	34.28	43,109.99
1935-36....	699,600.00	20,060	677,128.37	2.24	.93	33.76	35,264.90
1936-37....	728,000.00	20,576	674,869.86	2.15	.91	32.79	218,029.50
1937-38....	735,000.00	21,378	711,737.60	2.21	.95	33.29	.....
1938-39....	735,000.00	.....	.....	...	...	....	.....

The Company was ordered to remove 574 of its overhead connected bracket lights from the streets which in the course of reconstruction had been declared underground districts and equipped with new electrolier systems. The year thus closed with 325 additional Company-owned lights in service, 256 of which were installed in various locations to satisfy requests or needs for better lighting.

Preliminary plans for new lighting systems on streets under reconstruction during the end of the year, or slated for reconstruction next fiscal year, were made and the cost of construction was estimated for budget purposes. These plans proposed the installation of 1,448 new City-owned lights on 18.3 miles of streets at a total cost of $448,300. These lights would have replaced 702 existing Company-owned lights. The necessary funds for this work were included in the 1938-39 budget estimate, but were deleted. The department is therefore facing the necessity of ordering the Pacific Gas and Electric Company to install these lights under the annual contract provisions. This will result in an increased annual operating cost in excess of $40,000.

The funds requested were intended for the completion of the lighting systems partly installed in connection with the paving of the streets. The W.P.A. has continued to provide conduits for street lighting in all streets widened by them whenever so requested by the department. Likewise, the City Engineer has incorporated in the plans for street improvements, the necessary conduits for complete lighting systems whenever funds used for the paving work have permitted their installation.

All of these installations have been planned and the work has been done under the inspection and supervision of this department. Table No. 7 shows the street lighting conduits thus installed in City streets during the year.

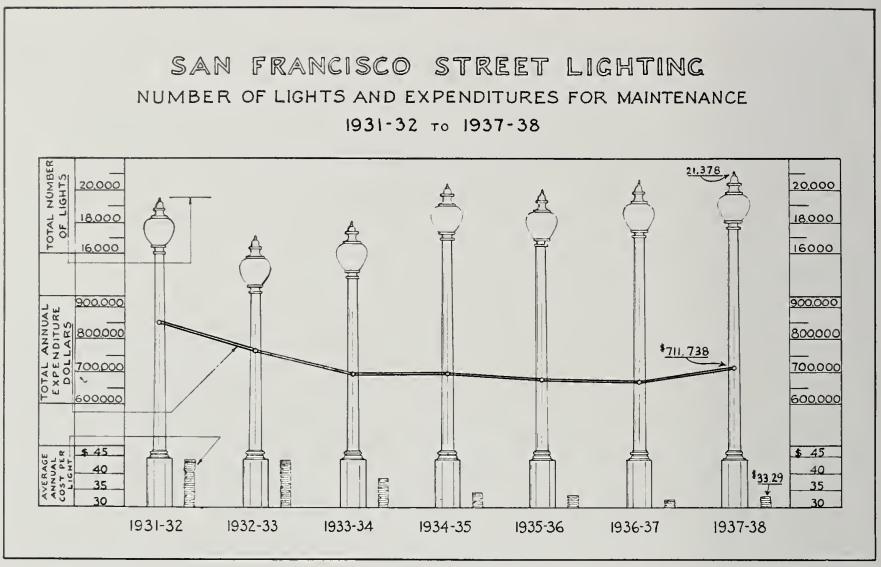
When the Pacific Gas and Electric Company has been ordered to install lights on such reconstructed streets, they have been allowed the use of these City-owned conduits and the installation of wires and lighting equipment has been made in

Plate H Plate I Plate J
BRACKET LIGHTS MOUNTED ON TROLLEY POLES ALONG THOROUGHFARES

accordance with plans and specifications prepared by this department. Thus the high standard of illumination and construction established by the department is maintained in the interest of public safety and reliability of service.

TABLE No. 6
NEW CITY-OWNED STREET LIGHT CONSTRUCTION COMPLETED DURING 1937-1938

Location	Number of Lights	Financed by	Value	
Installed Real Estate Subdivisions				
McLaren Park	7	Tract Owner	$ 2,606.40	
Geneva Terrace	11	Tract Owner	4,483.20	
University Terrace	7	Tract Owner	1,966.00	
Ulloa Street	4	Tract Owner	1,948.20	
Normandie Terrace	3	Tract Owner	920.00	
Montclaire Terrace	3	Tract Owner	828.00	
Lurmont Terrace	1	Tract Owner	280.00	
Ocean Avenue	5	Tract Owner	1,620.00	
Moraga Street	1	Tract Owner	300.00	
	38		$14,951.80	$ 14,951.80
Installed by City Contract				
Taraval Street	12	Department of Public Works	$ 3,808.58	
Castro Street Extension	10	Department of Public Works	2,948.00	
Oregon Street	2	Department of Public Works	731.16	
Clarence Place	1	Department of Public Works	425.60	
Stockton Street Tunnel	19	Electric Power Bureau—1936-37 Funds	3,449.00	
Polk Street	1	Electric Power Bureau—1936-37 Funds	290.00	
	45		$11,652.34	$ 11,652.34
Installed by W.P.A.				
Fell Street	104	Materials: Elec. Pow. Bur. Funds—1936-37	$23,511.52	
Gough Street	68	Materials: Elec. Pow. Bur. Funds—1936-37	15,932.19	
Golden Gate Avenue	125	Materials: Elec. Pow. Bur. Funds—1936-37	26,760.00	
Golden Gate Park	30	Materials: Elec. Pow. Bur. Funds—1936-37	11,800.00	
Grove Street	8	Materials: Elec. Pow. Bur. Funds—1936-37	1,481.67	
Bay Street	49	Materials: Elec. Pow. Bur. Funds—1936-37	11,706.19	
Lombard Street	10	Materials: Elec. Pow. Bur. Funds—1936-37	2,419.00	
	394		$93,610.57	$ 93,610.57
Total	477			$120,214.71



Negotiations are under way with the Pacific Gas and Electric Company to secure lower rates because of the use of the City-owned conduits on new installations.

Specifications have been prepared and forwarded to the Company for the installation of lights on seven streets. In all 392 lights have thus been ordered installed under this new arrangement. The installation of 69 of these lights was completed and the lights put into service before the end of the year. Table No. 8 is a résumé of these improvements.

Besides these improvements already under order, plans are in the course of preparation for the installation of new lighting facilities on the streets adjacent to the new Bridge Terminal Building. These plans call for the installation of 38 single-light and 36 double-light 22-foot pendant standards, as well as 70 single-light upright standards.

Plans are also under way for the improvement of 19th Avenue between Pacheco and Taraval streets, as well as Polk Street from Market to Grove Streets.

For the purpose of uniformity, the department has standardized the equipment used in its plans as far as possible. The installations may be divided into four classes.

1. **Business Districts**—On streets falling in this class, 22-foot single or double light pendant standards have been used, depending on the importance of the street. These standards have been arranged in a staggered spacing approximately 60 feet apart, and equipped with 6000-lumen lamps. Provision has been made for increasing the lamp size as need for more light arises, and for converting single light standards to double light. These types are shown on plates A and B.

TABLE No. 7

CONDUIT INSTALLATIONS FOR STREET LIGHTING
1937-1938

Street	Linear Feet Conduit	No. of Foundations	No. of Pullboxes	Installed by:
Valencia St., Market St. to Mission St....	22,000	..	171	W. P. A.
Third St., Burke Ave. to Bayshore Blvd..	24,000	52	1	W. P. A.
Third St., Howard St. to Channel St.....	8,300	..	..	Dept. of P. W.
17th St., Market St. to Treat Ave.....	15,000	67	12	W. P. A.
Broadway, Davis St. to Mason St.....	12,000	61	5	W. P. A.
Geneva Ave., Prague St. to County Line.	8,500	31	1	W. P. A.
29th Ave., Pacheco St. to Quintara St....	1,800	..	..	Dept. of P. W.
Bay St., Van Ness Ave. to Polk St.....	1,000	6	..	W. P. A.
G. G. Ave., Market St. to Van Ness Ave..	7,500	..	..	Dept. of P. W.
19th Ave., Sloat Blvd. to Taraval St.....	4,100	..	2	Dept. of P. W.
19th Ave., Lincoln Way to Lawton St....	3,800	..	2	Dept. of P. W.
Harriet St., Folsom St. to Harrison St...	500	3	1	Dept. of P. W.
2nd St., Brannan St. to Townsend St.....	1,300	..	..	Dept. of P. W.
	109,800	220	195	

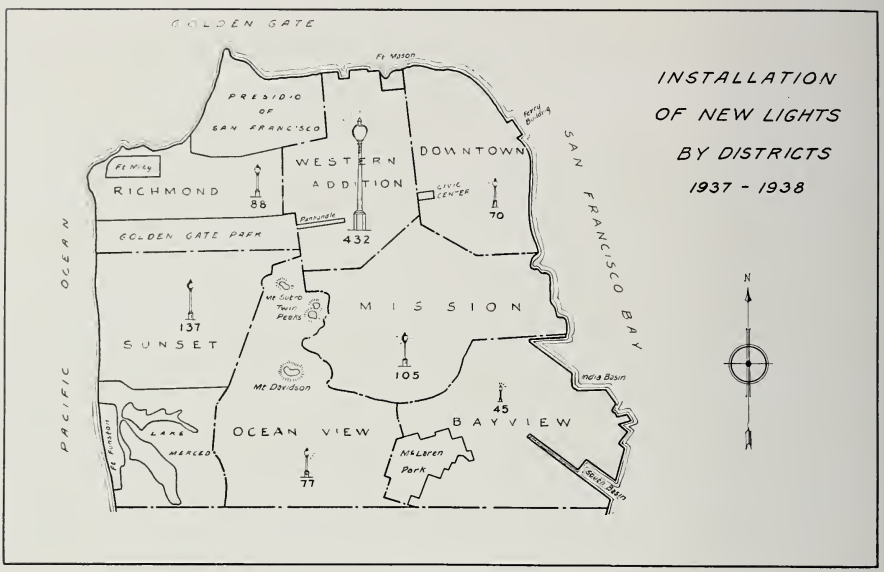
TABLE No. 8

NEW STREET LIGHTING PLANNED AND ORDERED INSTALLED

Street	Length	Number of Lights	Type of Lights	Conduit Installed by:
17th STREET				
Market St. to Treat Ave.....	3,700 Ft.	69	16½-Ft. Upright Iron.....	W. P. A.
BAY STREET				
Van Ness Ave. to Polk St....	412 Ft.	6	16½-Ft. Upright Concrete...	W. P. A.
CALIFORNIA STREET				
Van Ness Ave. to Fillmore St.	3,550 Ft.	50	16½-Ft. Upright Concrete...	To be installed by Pacific Gas & Electric Co.
BROADWAY				
Mason St. to Davis St.....	3,860 Ft.	57 4	16½-Ft. Upright Iron..... 22 Ft. Pendant Iron.....	W. P. A. W. P. A.
THIRD STREET				
Howard St. to Channel St....	3,800 Ft.	52	20-Ft. Upright Iron.....	Dept. of P. W. Contract
Jerrold St. to Williams St....	3,700 Ft.	52		W. P. A.
GOLDEN GATE AVENUE				
Market St. to Van Ness Ave..	2,800 Ft.	55	22-Ft. Pendant Iron.....	Dept. of P. W. Contract
19th AVENUE				
Lincoln Way to Lawton St...	2,800 Ft.	26	20-Ft. Upright Concrete.....	Dept. of P. W. Contract
Taraval St. to Sloat Blvd.....	3,050 Ft.	25		
Total.....	27,672 Ft.	392		

2. Thoroughfares—Streets that form part of the City's boulevard system have been lighted with 20-foot wrought iron or concrete standards, shown in plates C and D. Along primary thoroughfares, a 120-foot opposite spacing, or in cases of center strip lighting, a spacing of 180 feet along the center line, has been employed. On secondary thoroughfares a staggered spacing of 125 feet to 140 feet has been employed. In either case, 6000-lumen lamps have been used, although the system as constructed can carry 10,000 or 15,000-lumen lamps should higher light intensity later be found desirable.

Either pendant or upright brackets attached to trolley poles have been used on thoroughfares where such poles have been available, thus avoiding the setting



of light standards. These types of lighting have been installed on Van Ness Avenue, Potrero Avenue, and on Market Street west of Valencia Street, and are shown on plates H, I and J.

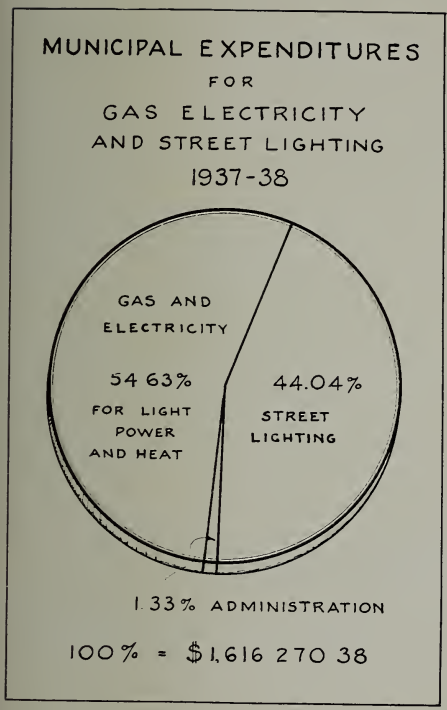
3. **Residential Districts**—Plates E and F show standards used on streets in the apartment house and secondary business areas. These are 16½-foot upright metal or concrete standards spaced approximately 65 feet apart in a staggered arrangement.

In purely residential areas, the spacing is increased to a maximum of 200 feet. All of these lights are equipped with 4000-lumen lamps.

4. **Less Important Streets and Industrial Areas**—On streets falling in this category, 20-foot metal shafts with pendant brackets have been installed approximately 200 feet apart. This type of equipment is shown on plate G.

General—In general 6.6 ampere series circuits have been used, although a few 20-ampere circuits have been installed in center strip lighting where both sides of the circuit can be placed in the same conduit. Auto-transformers housed in the luminaire casing increases the 6.6 ampere in the circuits to 15 or 20 amperes at the lamps, depending on the size of lamp. The limited space in the pendant units prevents the use of auto transformers at the lamps, therefore insulating transformers have been installed in the base of the standards or straight series 6.6 and 20-ampere lamps have been used with film cutout high voltage sockets.

In the western section of the City, nearer the ocean, concrete standards have been employed as a safeguard against excessive corrosion due to fog and salt air. Iron standards have been found reasonably free of this trouble in the downtown and Mission districts.



The first sodium vapor lamp City installation was made when the Stockton Street Tunnel was relighted in connection with the general renovation of this structure. Nineteen 10,000-lumen units in specially designed subway type fixtures replaced seventy 150-watt incandescent lamps in enameled reflectors, materially improving the appearance and safety of this busy thoroughfare.

Administration

Of particular interest is the relatively low cost of administration which is only 1.3% of the total cost. Table No. 9 shows a breakdown of this expenditure, which covers all functions of the department. These functions may be summarized briefly as follows:

Checking of monthly bills for the 1,065 gas and electric accounts and periodically analyzing the accounts as to application of the most economical rate.

Complete recording of quantity and cost of each service and general recording of all departmental expenditures.

Surveying existing and new installations in the field; analyzing rate applications; recommending, planning and supervising installation of recommended changes in order to secure the lowest possible rates.

Investigation and correction of all street lighting complaints.

Planning of all street lighting improvements and supervising and inspecting of the installation. Inspecting street lighting maintenance and keeping of complete street lighting records.

Acting in an advisory capacity for all City departments in matters pertaining to lighting and power usage, and many other problems involving electrical engineering and gas usage.

Electrolysis Survey of High Pressure Auxiliary Water Supply

At the request of the Department of Public Works, an electrolysis survey of the high pressure pipe system was made by this department. The same personnel, while part of the City Engineer's staff, had conducted a comprehensive survey of the system in 1927. Since that time, extensive additions had been made to the area covered and the Board of Fire Commissioners were desirous of knowing if any electrolysis conditions had been created which would be harmful to the system. With the aid of one man from the City Engineer's staff, this survey was undertaken during the previous year, and completed during the past fiscal year.

A complete report and a series of maps showing the condition disclosed by the survey and the steps taken to mitigate these conditions, was completed and forwarded to the City Engineer on April 7, 1938.

PERCENTAGE OF KILOWATT HOURS PURCHASED AT VARIOUS AVERAGE COSTS

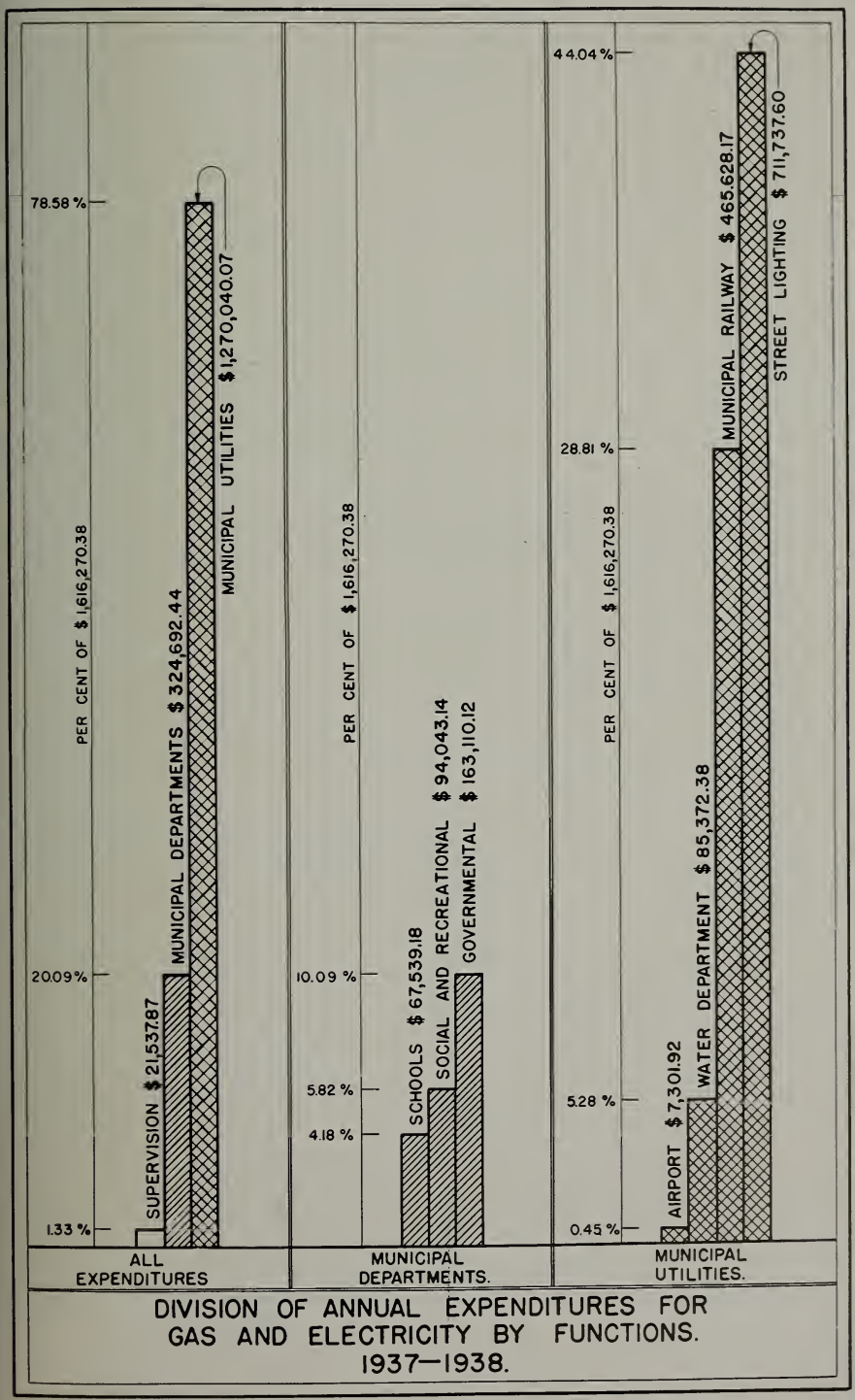
	Kw-hr.	Percent of Total
Below 1 cent	6,528,000	10.85
1 to 1.5 cents	42,556,739	70.72
1.5 to 2 cents	6,799,782	11.30
2 to 2.5 cents	2,413,587	4.01
2.5 to 3 cents	1,629,771	2.71
Over 3 cents	247,420	.41
Total	60,175,399	100.00

PERCENTAGE OF DOLLARS SPENT FOR ELECTRICITY AT VARIOUS AVERAGE COSTS

Below 1 cent	$50,287.10	6.50
1 to 1.5 cents	487,434.50	62.97
1.5 to 2 cents	119,401.50	15.42
2 to 2.5 cents	56,938.52	7.36
2.5 to 3 cents	44,828.52	5.79
Over 3 cents	15,200.35	1.96
Total	$774,090.49	100.00

MASS TRANSPORTATION

The subway rapid transit plan submitted by Manager of Utilities E. G. Cahill, in May, 1936, and his supplemental report of May, 1937, was discussed at great length by the Board of Supervisors and by various organizations, with the result that the matter was placed on the November, 1937, ballot. The vote was 68,834 in favor and 95,246 opposed, which showed decisive objection to construction of subways at this time. Unquestionably, a considerable amount of this opposition was caused by the active opposition of the Market Street Railway. It opposed the plan for the reason that it made no provision for the operation of the Market Street Railway cars in the subways, and it feared a heavy loss of patronage due to the faster and better service which the subways would give Municipal Railway patrons. The organized employees of the Company opposed the plan in labor circles and the Market Street Railway, through its control in various civic organizations, waged concealed though effective battle. The discussion in public brought forward many self-elected transportation experts with fantastic schemes which tended to confuse the voters.


78.58 %
20.09 %
1.33 %
PER CENT OF $1,616,270.38
SUPERVISION $21,537.87
MUNICIPAL DEPARTMENTS $324,692.44
MUNICIPAL UTILITIES $1,270,040.07
ALL EXPENDITURES
10.09 %
5.82 %
4.18 %
PER CENT OF $1,616,270.38
SCHOOLS $67,539.18
SOCIAL AND RECREATIONAL $94,043.14
GOVERNMENTAL $163,110.12
MUNICIPAL DEPARTMENTS.
44.04 %
28.81 %
5.28 %
0.45 %
PER CENT OF $1,616,270.38
AIRPORT $7,301.92
WATER DEPARTMENT $85,372.38
MUNICIPAL RAILWAY $465,628.17
STREET LIGHTING $711,737.60
MUNICIPAL UTILITIES.
DIVISION OF ANNUAL EXPENDITURES FOR GAS AND ELECTRICITY BY FUNCTIONS. 1937—1938.

The W. P. A. forces have continued their survey work, mapping all surface and sub-surface obstructions in the streets where the subway lines were proposed, and in addition they have made core borings along the same routes. The data they have prepared will be of value when the subway is built and in the meantime will provide a valuable record for many public and private purposes.

One of the arguments presented against the subways with great vigor, was that the City should acquire the Market Street Railway system and combine it with the Municipal system before attempting a rapid transit program. In the 1937-38 Budget the Board of Supervisors included an appropriation of $10,000 for studying the feasibility of unification, and estimating the financial results thereof, and providing for universal transfers with a city-wide five-cent fare. On April 1, 1937, the Market Street Railway made application to the California Railroad Commission for a seven-cent fare. After careful deliberation the Commission allowed the Company to institute a two-cent charge for transfers but required that the fare remain at five cents. The charge for transfers became effective July 6, 1937. The financial results from this were unsatisfactory to the Company. The revenues of the Municipal Railway line picked up about $500 a day. The total loss of revenue to the Market Street Railway was approximately $1800 per day, so that the net result was a loss of about $1300 per day in fares collected by both systems.

When the Market Street Railway presented these results to the Railroad Commission, authorization was given to change the fare on the Market Street Railway lines from five cents to seven cents, or four fare tokens for twenty-five cents. This new fare was placed in effect on May 29, 1938. It is as yet too early to form an opinion as to the financial results of this increase in fare. The Municipal Railway, still continuing to operate at a five-cent fare, received a very large percentage of the patronage of the Market Street Railway in territory served by both lines. Present indications are that this fare raise will not be beneficial to the Market Street Railway. The Company has not been receiving sufficient income to properly maintain the properties and its track and equipment show the effect of this neglect. The Company has had to borrow money from banks and is behind in its payments for electric energy.

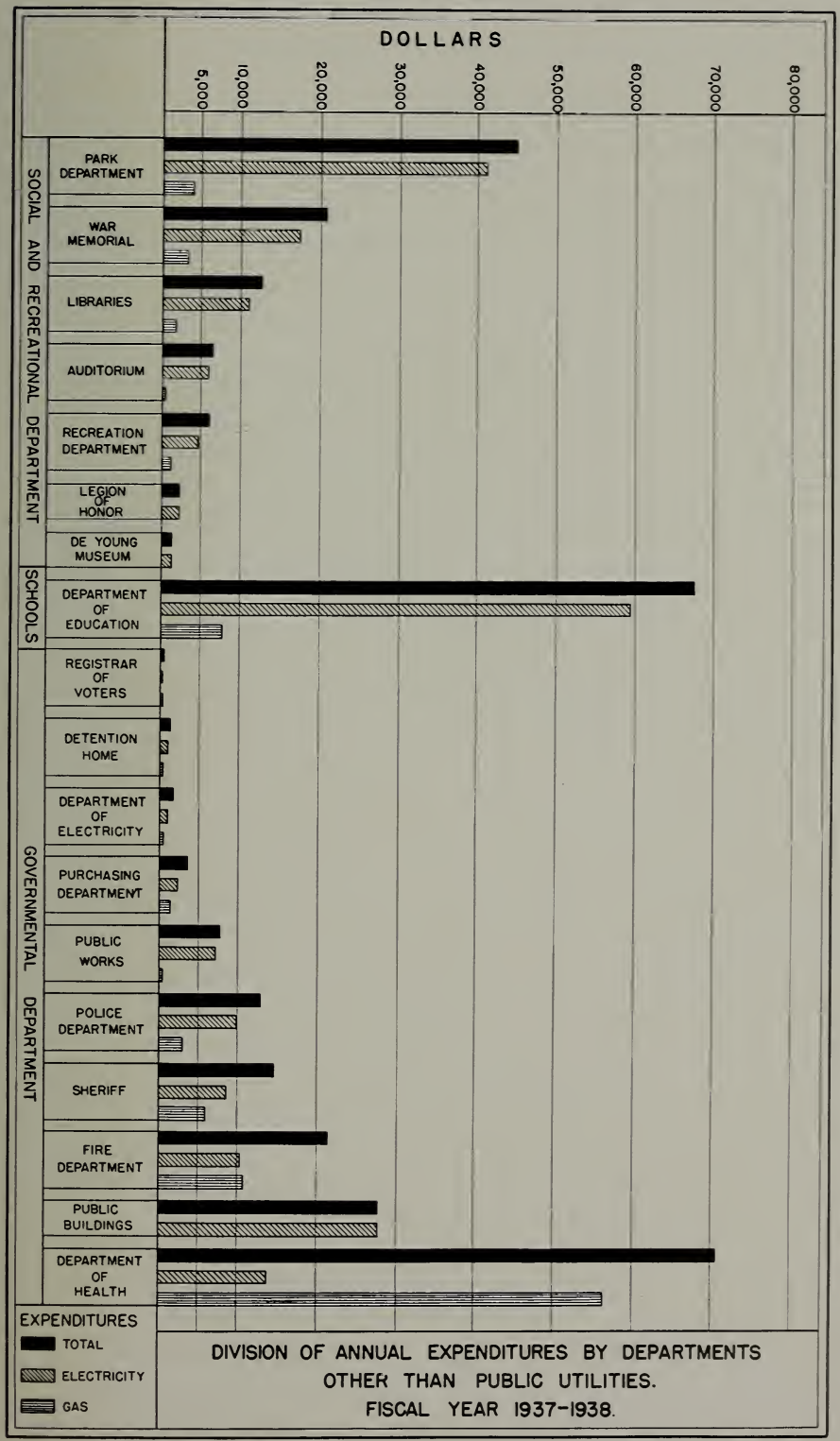
On July 5, 1938, the Board of Supervisors ordered Mr. E. G. Cahill, Manager of Utilities, to enter into negotiations with the Market Street Railway for the purpose of determining a price which the Company would be willing to accept for its properties. These negotiations are under way.

MUNICIPAL RAILWAY ENGINEERING

While there were no major jobs of either new work or reconstruction done for the Municipal Railway, a number of minor jobs have been carried on throughout the year.

Arrangements were made to reroute Municipal Railway feeders so as to avoid Nineteenth Avenue from which all poles must be removed, and to reinforce the power supply to the Taraval Street line.

The widening of Nineteenth Avenue called for the lowering of the grade of the Municipal Railway track at Judah Street and Nineteenth Avenue. Tenders for this work were received and being above the cost estimated, all were rejected. New bids were requested. The Department prepared and submitted a proposal which was lower than any of the others, and in conformity with the estimated cost. The contract was awarded to the City's forces and work is now under way.



DIVISION OF ANNUAL EXPENDITURES BY DEPARTMENTS
OTHER THAN PUBLIC UTILITIES.
FISCAL YEAR 1937-1938.

BRIDGE TERMINAL TRACKS

The construction of the interurban railway tracks across the San Francisco-Oakland Bay Bridge and the terminal station just south of Mission Street between First and Fremont streets, is progressing rapidly. On being informed that train operation would commence about January 1, 1939, efforts were made to hasten an agreement with the Market Street Railway for the joint construction of the tracks and other facilities required to extend street car service to the Station. After much delay the Company finally definitely stated that they were unable to finance one-half of the cost of the new tracks.

After a number of conferences the Market Street Railway finally agreed that if the Municipal Railway would construct the tracks, overhead and control systems, it would pay the Municipal Railway an annual rental charge, maintain the tracks over which it operated, and pay one-half of the charge for signalmen and other employees assigned to the operation of the loop. Formal agreement has not yet been drawn up, but every indication is that it will be signed shortly.

The track plan proposed will provide two tracks from Market Street to the Terminal via First Street and returning over Fremont Street. One track will be for the exclusive use of the Municipal Railway and one for the exclusive use of the Market Street Railway, with the two railways jointly using the center one of the three loading tracks at the front of the Terminal Building. The Market Street Railway will supply all of the necessary propulsion power from its adjacent substation; the Municipal Railway will pay the Company for the energy used by its cars.

The delay in obtaining this contract will make it difficult to secure the necessary track special work and install it prior to the opening of the Bridge for train service.

SAN FRANCISCO AIRPORT DEVELOPMENT

Diagram superimposed on air view shows construction now in progress

SAN FRANCISCO AIRPORT

B. M. DOOLIN
Manager

B. M. DOOLIN
Manager, San Francisco Airport

Foreword

In the development and maintenance of an air terminal to serve a major metropolis, too much emphasis can not be placed on the need of vision. So rapid has been the advancement of the aviation industry during the past decade that great precaution must continually be taken to provide "tomorrow's facilities today." The aerial trade routes of the world continue their far-reaching expansion, spanning oceans and continents alike, bringing remote ports and markets within comparatively short distances of one another. American operated air transport routes, both domestic and foreign, have increased 7% in length during the past fiscal year, the figure being 67,738 miles of airway as of June 30, 1938. Considering miles flown by the domestic airlines only (those operating within continental United States) we find a total of 68,604,944 miles for the twelve-month period, an increase of 4% over the previous year. The figure on miles flown by our foreign routes has not yet been published.

At San Francisco Airport, passenger arrivals and departures on the scheduled air lines totaled 53,394; outbound air mail totaled 528,904 pounds, and outbound air express 140,828 pounds. Inbound air mail and express are not weighed at the Airport.

Airport Bond Issue Approved by Voters:

That San Francisco, world renowned seaport city of both past and present day commerce, will enjoy full benefit of the new born commerce of the air as that commerce continues its development, has been definitely assured. At the election of November 2, 1937, the people gave enthusiastic approval of an Airport Bond Issue in the amount of $2,850,000. This amount had been decided upon by the Public Utilities Commission as an expenditure that would be necessary to carry on to completion the Airport landplane and seaplane development project discussed in last year's fiscal report. At that time the project was largely dependent upon Federal W. P. A. funds, but with unexpected discontinuance of those funds in the summer of 1937 the financing problem was placed entirely in the hands of the city. Their vision and progressive spirit with regard to the future importance

ADMINISTRATION BUILDING
New structure includes offices, control tower, waiting rooms, restaurant, air mail and express stations, radio and weather bureau.

of aviation in the field of commerce are apparent from the results of the election. The bond issue carried by a vote of 108,573 to 46,683. It was approved by all civic and political groups in San Francisco and received full support of the press. No obstacle can now impede the progress of our airport development program, and it will be carried on to completion with as much dispatch as engineering and construction problems will permit.

The Works Progress Administration will play an important part in the program by furnishing labor and such materials as W. P. A. rules will permit on selected portions of the work which are best suited to the Federal Works program.

Field Enlargement Under Way:

As the fiscal year is brought to a close a contract has been let for the construction of a 9,000-foot sea wall around the 300-acre tide flat area to be reclaimed along the eastern boundary of the Airport, a reclamation project that will more than double the size of the present landing area. The two primary physical requisites of a major air terminal are sufficient landing area and freedom from obstructions. San Francisco Airport is singularly qualified from both standpoints, having no obstructions on approaches to the field, and with a landing area that will total some 550 acres. Runways will be from 4,500 feet to 6,000 feet in length, the longest being the prevailing-wind instrument-landing runway. Other dis-

tinct advantages of this terminal are excellent all year weather conditions, freedom from fog, and close proximity to the business center via the Bayshore Highway. The Airport owns an additional area of 526 acres west of the field boundary separated from the landing field proper by the Highway. The plot is admirably suited to the development of aircraft industries, and bodes well for transforming this peninsular section into one of the major aviation centers of the world.

Included in the development plan is the construction of a seaplane harbor adjacent to the landplane area on the northeast. A U. S. Coast Guard base will be established at this site, for which Congress has already authorized an appropriation of $927,000.

Negotiations are under way for the installation of a radio range station adjacent to the Airport, and a blind landing beam on the long runway, which facilities would guide pilots to a safe landing under any type of weather condition.

Thus, San Francisco Airport management is busily engaged not only in handling the present day air traffic of our metropolitan district, but far more important is looking into the future, the crowded years ahead.

New Administration Building Dedicated:

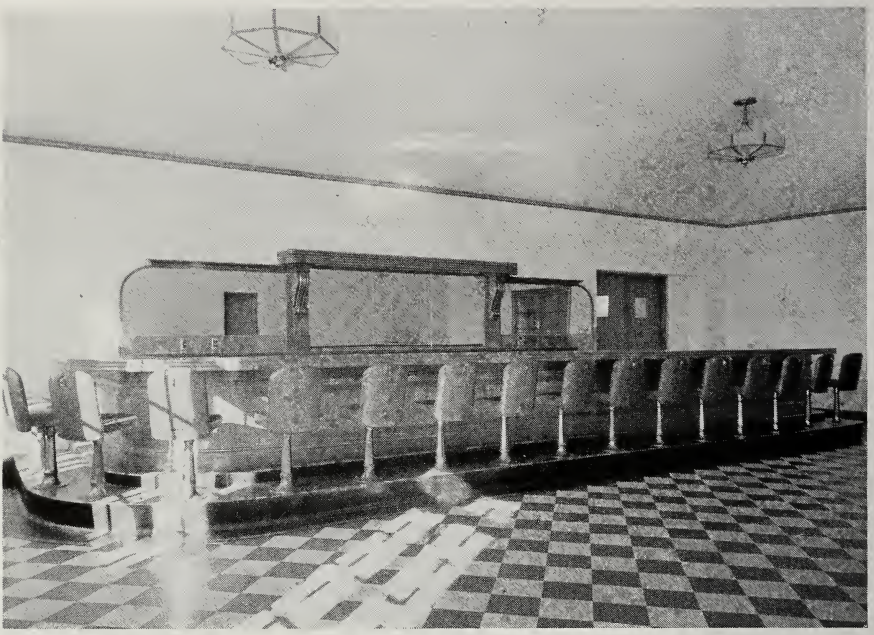
In October, 1937, the Airport's new $160,000 Administration Building was formally dedicated. The structure is outstanding in its field, and houses every modern convenience for airport operation. In addition to the Airport's administrative offices we find United Air Lines offices, TWA offices, Bureau of Air Commerce Inspector's office, ticket counter, check room, limousine office, telephone room, telegraph offices, cargo room, crew room, coffee shop, cocktail lounge, concession counter, Weather Bureau, and Traffic Control Tower. The Traffic Control Tower occupies a fourth floor of its own, being a glass enclosed octagonal-shaped room 25 feet from wall to wall. From this spot all air traffic within a radius of several miles is controlled by means of radio equipment and signal lights. Specially designed desks are installed for housing radio equipment, field lighting and communications controls.

The building's lobby measures 44 feet by 94 feet. It is two and one-half stories high and is attractively furnished with an eye toward both comfort and utility, the furniture artistically following the architectural lines of the building. Universal approval of the new structure has been voiced by airline officials and passengers from all parts of the world.

Power Boat Added to Airport Equipment:

In order that adequate precaution may be taken to cover all types of emergencies in Airport operations, remote though the possibilities may be, a utility power boat 35 feet in length has been added to the Airport equipment. The craft is much larger and faster than the one formerly in use. All crew chiefs and airport attendants are familiar with its operation.

The boat is of special design, and capable of carrying some 40 people. It is powered with a 275-horsepower Hall Scott engine, and has a top speed of 25 to 30 miles an hour. Name chosen for the craft is "Cavu"—a weather symbol familiar to all aircraft pilots, meaning "ceiling and visibility unlimited."



AIRPORT COFFEE SHOP
Refreshment and restaurant facilities are included in new Administration Building.

TWA Establishes Base at San Francisco Airport:

On September 5, 1937, a new transcontinental air transport line inaugurated service between San Francisco and the Atlantic Coast. TWA, Inc., one of the world's major airlines, established its Bay region base at San Francisco Airport, and began service to New York via Las Vegas, Nevada, Boulder City, and Albuquerque, New Mexico. This new transcontinental line joins the older TWA southern route at Winslow, Arizona.

In addition to its advantages from the standpoint of commerce, the newly established route takes air passengers over one of the most scenic sections of the world, including such spots as the towering southern Sierra-Nevada Mountains, Mt. Whitney—highest peak in the United States; Death Valley—lowest point below sea level in our country; famous Boulder Dam and Lake Mead, the Grand Canyon, the world famous Meteor Crater, and the Painted Desert.

San Francisco is thus directly linked to eastern cities via two major air routes, the mid-continent route flown by United Air Lines, and the new southern route of TWA.

A three-day program, sponsored by Mayor Angelo J. Rossi's Citizens' Committee, welcomed the airline back to San Francisco. It had previously established its Bay region base at our field in 1933, but with nationwide cancellation of air mail contracts on February 15, 1934, the service was discontinued. The route at that time, however, merely linked San Francisco with the east coast via a TWA shuttle run to and from Los Angeles. The route under present operation establishes an entirely new airway between San Francisco and Winslow, a route never before flown by scheduled aircraft. Hence, inauguration of this service marks a significant step forward in the nation's program of airway expansion.

Pan American Airways To Base at Treasure Island:

That Pan American Airways, world's largest air transport organization, will establish its permanent Pacific Coast base at San Francisco has been definitely assured. Taking advantage of the splendid seaplane facilities being developed at the "Treasure Island" Exposition site, which is to become San Francisco's second municipal airport after the Fair is brought to a close, and realizing that these facilities will be available within the next few months, negotiations were recently begun between the Pan American Airways authorities and the Public Utilities Commission for drawing up a lease whereby the company would establish its Pacific Coast base at that spot. As the fiscal year is brought to a close, details of the lease have been completed and approved by both parties, the only remaining feature being the actual signing of the important document by the Mayor of San Francisco, the Pan American Airways officials, and the Public Utilities Commission.

Details of the lease provide that one of the permanently constructed hangars at Treasure Island will be used for the airline's operation, and a portion of the Administration Building will house the company's offices. A building program at the site, to involve the expenditure of some $500,000 for shops, ramps, and quarters will be inaugurated immediately by Pan American Airways, to provide complete facilities necessary to the operation of a major seaplane base.

Rental stipulations provide that Pan American Airways shall pay a fee of $1,000 per year for the first five years, $5,000 per year for the next five years, and $10,000 per year for the new ten years if the lease is renewed.

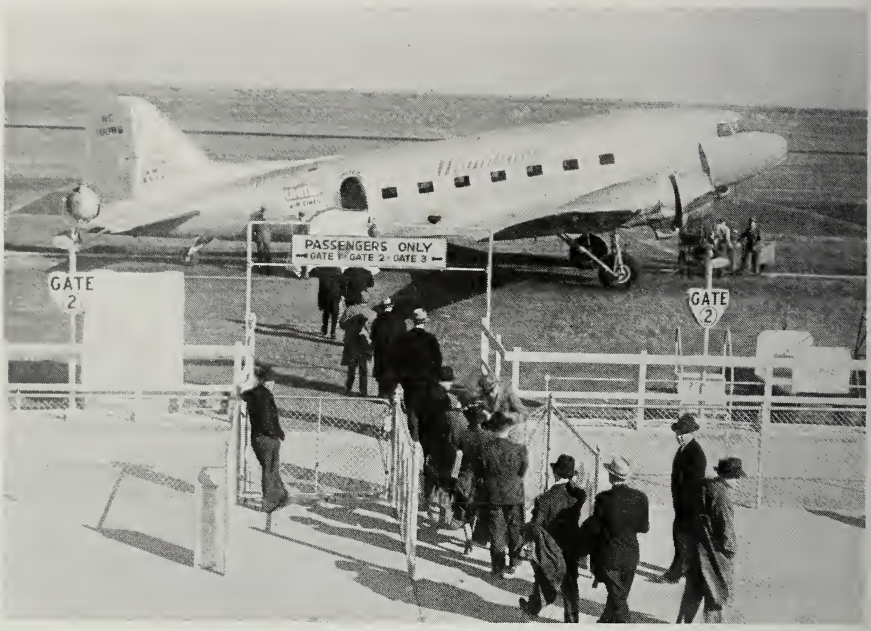
With Pan American based at Treasure Island, visitors at the Golden Gate International Exposition will witness complete operations of the giant clippers, observing their graceful landings at the seaplane harbor—marking the end of a long journey across the Pacific; the loading of cargo on outbound clippers; the boarding of passengers on the huge seaplanes, their taxiing through the channel to takeoff position, and final sweep into the skies with wings spread toward the Golden Gate—westward bound for the Orient.

As of June 30, 1938, Pan American Airways had completed 1,950,000 miles of scheduled flying between San Francisco, the Philippines and China. Passenger-miles flown over this route had reached the impressive total of 15,000,000. It would be difficult indeed to visualize the far reaching benefits to be derived from the establishment of this important operations base at San Francisco. As round-the-world air travel and air commerce continues its steady development, our city is assured of a position of major importance in this field of trade and transportation.

NATIONAL AERONAUTICAL PROGRESS

Considering the fact that the people of San Francisco have forcefully indicated their desire to keep apace with the rapid development of the new air transportation industry, it may be well to supplement the report of progress at our own air terminal with a brief statement regarding aeronautical progress over the nation as a whole. Since the history of every metropolis is closely bound with the history of its transportation facilities, it is inevitable that the future life of San Francisco, both culturally and commercially, will be immeasurably influenced by the widely expanding transportation of the air.

As stated at the outset of this report, the miles flown by our continental lines increased 4% during the past fiscal year, bringing the total for the 1937-38 period to 68,604,944 miles. Passengers carried totaled 1,214,958, an increase of 14%. Figures on our foreign airline operations are not yet available.



PASSENGER TERMINAL
New Administration Building and passenger facilities serve thousands at San Francisco Airport.

In the field of aircraft production a 25% increase was shown during the calendar year 1937 over the year 1936. Total aircraft produced was 3,773 in 1937, against 3,010 in 1936.

Transatlantic air transport service, to complete round-the-world air schedules, is to be inaugurated during the fall of 1938, a reciprocal agreement with European countries having been completed during recent months. Many successful survey flights preceded the agreement. Pan American Airways is surveying two other new routes, one that will link San Francisco with Australia via the Hawaiian Islands and the other to provide a new aerial route to Alaska.

Civil Aeronautics Authority:

But perhaps the most impressive indication of the important growth of aviation during the past few years is the fact that on June 23, 1938, Senate Bill 3845 was signed by the President, creating a separate governmental agency for the supervision of civil aeronautics in the United States. The increased responsibilities attendant upon proper direction of this new industry have advanced to the point where such an independent department was deemed essential, and a realization of the unlimited possibilities of future aeronautical development made it imperative that no further delay be met in creating such a department. Consequently, as soon as the new "Civil Aeronautics Authority" can be organized, the aeronautical responsibilities presently held by the Bureau of Air Commerce of the Department of Commerce will be transferred to the new governmental agency, and many new responsibilities set forth in the Senate Bill will be assumed as well.

To review the growth of the aviation industry under the Bureau of Air Commerce since 1926, a tabulated comparison may be enlightening. The following "Summary of Progress" is taken from the Air Commerce Bulletin, Vol. 10, No. 1:

SUMMARY OF PROGRESS OF CIVIL AERONAUTICS

Air Navigation Facilities Developed by Bureau of Air Commerce

	1926	1933	1938
Miles of lighted airways	2,041	18,655	22,671
Radio broadcast stations	17	68	85
Radio range stations	.....	94	170
Miles of teletypewriter service	.....	12,064	25,460
Airways beacon lights	612	1,796	1,950
Intermediate landing fields	92	265	275

Safety of Air Travel

Scheduled air lines (foreign and domestic operations):	1927	1933	1937
Miles flown per accident	234,820	541,015	1,539,923
Miles flown per fatal accident	1,467,622	6,071,394	12,832,694
Miscellaneous:			
Miles flown per fatal accident	315,789	391,334	556,757
Fatal accidents per 10,000,000 miles flown	31.7	25.6	18

Scope of Aviation

	1927	1933	1937
Firms engaged in industry	900	1,300	1,700
Pilots, certificated	1,572	13,960	17,681
Aircraft, certificated	1,908	6,896	9,152
Aircraft, uncertificated	832	2,388	1,684
Student pilot certificates, active	545	11,469	40,284
Airports	1,036	2,188	2,299
Aircraft production	1,995	1,324	3,773

Operations

Scheduled air lines:	1927	1933	1937
Aircraft in service	.....	504	386
Value	.....	$9,500,000	$19,500,000
Personnel employed	462	6,273	11,546
Passengers carried	8,679	568,940	1,267,580
Express and freight carried (pounds)	.....	2,452,812	8,914,067
Miles flown	5,870,489	54,642,545	76,996,163
Miscellaneous flying:			
Aircraft in service	2,612	8,780	10,446
Passengers carried	.....	1,246,134	1,580,412
Miles flown	30,000,000	71,222,845	103,196,355

New Flying Era:

A new era in air transportation history is about to be ushered in. It will be an era of huge 4-motored air transports flying in the rarefied regions of the substratosphere, at which altitudes advantage can be taken of higher speeds, greater comfort and safety, and more efficient and regular scheduled operation. Flying levels will be above heights reached by storm areas, and thus one of aviation's most troublesome obstacles will be surmounted. Landings and takeoffs can easily be made through the cloud levels by use of radio beams and blind landing equipment.

TREASURE ISLAND AIRPORT
After Exposition, man-made island in San Francisco Bay will serve as airport and base for Pan-American trans-Pacific operation. View shows Pan-American Clipper on way to China.

At least two major aircraft manufacturing companies are now constructing airliners for this type of operation. The Douglas Aircraft Company has just turned out its first "Douglas DC4," and the Boeing Aircraft Company will soon have completed the first of a fleet of "Stratoliners."

Douglas DC4

Initial test flights of the Douglas DC4 were begun on June 7, 1938. Although more than twice the size of its predecessor, the big ship will take off and land in less space than the smaller DC3. Its newly developed landing gear has a third wheel under the nose, a feature which adds both to safety of operation and passenger comfort. The cabin remains in a horizontal position even when on the ground, the tail controls remaining in an elevated position.

Wingspan of the DC4 is 138 feet, 6 inches. Its length is 87 feet, 7 inches, and its seating capacity is 47, including the crew of five. As a sleeper it will accommodate 30, including a luxurious private compartment with complete facilities, in separate quarters.

Top speed of the craft is 240 miles an hour, with a cruising range of 2,200 miles. Modern conveniences in this new de luxe transport include telephones, separate lounges and dressing rooms, secretarial service, and check rooms for hand baggage within the cabin itself.

Production models of the ship are to have supercharged cabins for substratosphere flying.

Boeing Stratoliner:

The new Boeing "Stratoliner" now under construction will be the first transport built in the perfectly streamlined shape of an elongated "teardrop," following nature's own design for a particle traveling through air with the least possible resistance. This big 4-motored ship will have a total of 4,400 horse power, will carry 33 passengers plus a crew of four, and 3,700 pounds of air mail and express. The cabins will be sealed to permit the use of pressure regulating equipment at high "over weather" flying levels. Gross weight of the craft will be 42,000 pounds. Its wings will measure 107 feet from tip to tip, and its fuselage will be 74 feet in length. In "upper level" flying it will travel at speeds around 250 miles an hour.

First of the new "Stratoliners" is scheduled for completion during the late summer of 1938.

TRANSPORT TRAFFIC

Two of the nation's major airlines operate from San Francisco Airport. United Air Lines run schedules from our terminal north to the Canadian border, south to the Mexican border, and east via the midcontinent route to New York. TWA, Inc., operates to New York via Las Vegas, Nevada; Albuquerque, New Mexico; and Kansas City, Missouri. Connecting schedules with these main routes provide excellent air transportation service between San Francisco and all sections of the nation.

Since beginning operation from San Francisco Airport last September, TWA has flown over three and one-half million miles (3,661,550) between the Bay region and New York. Nearly one million of these miles (819,000) were flown over the new portion of the route, that is, from San Francisco Airport via Fresno and Las Vegas to Boulder City, Nevada.

Prior to inaugurating the service last fall the air line operated an off-line ticket office in San Francisco. Since direct service began the number of ticket sales has increased 300%.

United Air Lines has long boasted of having flown more miles than any airline in the world. In addition to the midcontinent coast-to-coast route and the coast-wise border-to-border route which operate from San Francisco Airport, this airline has additional routes from Portland to Salt Lake City, and Pendleton to Spokane.

Traffic Figures at San Francisco Airport:

Although the tabulated traffic figures for the past fiscal year show impressive totals in passengers, mail, and express, the figures as a whole show a decrease from the previous year. The reasons for this condition are threefold, namely, the general business recession, the widespread adverse publicity given every airplane accident, and of great importance, the fact that the newly promulgated Air Traffic Rules force cancellation of schedules under much higher weather minimums than heretofore.

With regard to the business recession it must be borne in mind that a large percentage of air travelers are business people. Consequently the trend of business activity greatly affects the passenger totals. A similar condition develops with regard to mail and express, although with regard to the latter it may be mentioned that during the July to December period of 1936 large loads of "racing forms" were being carried by air express from San Francisco to Los Angeles. Figures tabulated after December, 1936, are consequently much lower.

ADMINISTRATION BUILDING, TREASURE ISLAND
This beautiful building, which houses the administration offices for the Golden Gate International Exposition, is designed for permanent use as an administration building for the new San Francisco airport on Treasure Island.

As regards passengers carried, an examination of the monthly totals reveals the fact that a large percentage of the previous year's passengers was recorded during the last half of 1936. It will be recalled that just after this period several airplane accidents occurred by coincidence within a relatively short period of time, and the psychological effect of the headlines which followed could not but have affected air travel. An aircraft accident is considered something of international interest by the press, but too little prominence is given the actual safety figures of airline operation. Few people know that the scheduled airlines of the United States flew some thirteen and one-half million miles (13,491,714) per fatal accident during the first half of the 1937-38 fiscal year. (Figures for the last half not yet published.) Of the 638,639 passengers carried, 29 met with fatal accidents. Passenger-miles flown per passenger fatality amounted to over ten and one-half million (10,618,964).

The third reason for the decrease is also an important one, particularly since it greatly affects San Francisco Airport itself. Since promulgation of the new Air Traffic Rules of the Civil Air Regulations, many schedules that formerly would have landed at our terminal have had to be cancelled from time to time because of weather conditions. The rules provide high weather minimums at fields which have no directional radio beam facility. Planes flying to and from our terminal must now do so under these "Contact" high-minimum flight rules. Application has been made to the Bureau of Air Commerce to provide us with the much needed facility, and as soon as this directional facility is installed, schedules may safely operate under "Instrument" flight rules, with much lower minimums permissible.

OPERATIONS OF UNITED AIR LINES AND TRANSCONTINENTAL & WESTERN AIR AT SAN FRANCISCO AIRPORT

Month	Transport Planes (Arrs. and Deps.) 1936-37	Transport Planes (Arrs. and Deps.) 1937-38	Percentage Increase or Decrease	Passengers 1936-37 Off	Passengers 1936-37 On	Passengers 1937-38 Off	Passengers 1937-38 On	Total Passenger Increase or Decrease	Pounds of Air Mail Out Only 1936-37	Pounds of Air Mail Out Only 1937-38	Percentage Increase or Decrease	Pounds of Air Express Out Only 1936-37	Pounds of Air Express Out Only 1937-38	Percentage Increase or Decrease
July	1,892	1,366	—28%	3,427	3,399	2,547	2,559	—25%	45,104	47,479	+ 5%	22,208	11,283	—49%
August	2,042	1,456	—29%	3,636	3,759	3,168	3,299	—13%	48,186	49,037	+ 2%	24,542	12,617	—49%
September	1,890	1,560	—17%	3,377	3,481	3,156	3,212	— 7%	44,586	48,090	+ 8%	41,163	19,714	—52%
October	1,924	1,413	—27%	3,423	3,429	2,781	2,598	—21%	47,699	46,223	— 3%	41,497	17,760	—57%
November	1,846	1,308	—29%	3,172	3,249	1,958	1,847	—41%	40,578	50,487	+24%	36,302	14,949	—59%
December	1,848	1,032	—44%	2,620	2,848	1,329	1,492	—48%	42,820	49,263	+15%	25,538	12,470	—51%
January	1,295	1,196	— 8%	1,232	1,074	1,955	1,637	+56%	43,834	43,390	— 1%	15,529	8,801	—43%
February	990	979	— 1%	841	840	1,602	1,769	+100%	37,339	37,763	+ 1%	9,720	6,697	—31%
March	1,290	1,176	— 9%	1,592	1,646	1,756	1,809	+10%	52,286	46,329	—11%	13,704	9,472	—30%
April	1,282	1,055	—18%	1,572	1,635	1,777	2,059	+20%	48,759	39,366	—19%	10,791	9,421	—13%
May	1,366	1,109	—19%	2,126	2,294	2,001	2,281	— 3%	50,590	40,824	—19%	11,299	8,995	—20%
June	1,300	1,004	—23%	2,304	2,382	2,229	2,573	+ 2%	49,524	30,653	—38%	11,786	8,649	—27%
Totals	18,965	14,654	—23%	29,322	30,036	26,259	27,135	—10%	551,305	528,904	— 4%	264,079	140,828	—47%
				59,358		53,394								

HANGARS, TREASURE ISLAND
This permanent building will be used as an exposition palace during the 1939 Fair and will later be used in connection with the airport to be located on Treasure Island.

PRIVATE FLYING

In the private flying realm the State of California continues to lead the nation. As of July 1, 1938, our State had a total of 180 airports, its nearest rival in this field being Texas with a total of 133. California also leads the nation in the number of aircraft with a total of 1,220, representing 11% of the aircraft in the United States. Considering aircraft pilots our lead is even more impressive, the total number being 3,703, representing 20% of the nation's total. This latter figure does not include 193 air line pilots in this State, which number is also greater than any State in the Union, and represents 17% of the nation's air line pilots.

Coming closer to home we find that at San Francisco Airport forty-one privately owned airplanes are based at the field, not to mention the large number of transient planes arriving from all sections of the country. Hangar space is at a premium, but the field's development plan includes the construction of additional hangars to accommodate the ever-increasing demand for room. However, at some future date it is probable that operations at this major base for interstate air commerce will not permit the field's use by training or light low-speed planes, in which case the plan is to transfer this type of operation to the City's future airport at the Treasure Island site.

Bureau of Air Commerce Establishes "Private Flying Section":

That the importance of private flying is well realized throughout the nation is indicated by the fact that during the spring of 1938 the Bureau of Air Commerce established a "Private Flying Section" in its Safety and Planning Division. The

Chief of the new Section will be assisted by an advisory committee of 20 members, chosen from all fields of non-scheduled operations. The committee will also serve as an advisory counsel to the entire Bureau on all matters affecting fliers in the non-scheduled classification. Among the categories to be benefited are: flying for sport, pleasure, personal business, student instruction, and fixed base operations.

Production of Smaller Planes Increases:

The design of planes for private use has advanced in all types and sizes. Greater safety has been the major consideration in improvements, with much work also being done in making the newer ships faster, more comfortable, and of generally improved performance. Two-passenger cabin land monoplanes lead the field in aircraft production. Ease of operation and low cost contribute to this factor. During the year 1937 a production increase of 60% in this one class of aircraft alone was shown over the year 1936. A total of 1,502 such planes was turned out, which figure represents 66% of the total aircraft manufactured for domestic civil use in the United States during 1937.

LOCAL FLYING

The forty-one planes based at San Francisco Airport as of June 30, 1938, may be divided into the following classifications:

25—Private use only
10—Flying school training
*3—Aircraft dealers' demonstrators
†1—Charter trips and scenic flights
1—Flying Club
1—Skywriter
41

*Two airplanes classed under flying school training also used as dealers' demonstrators.

†One airplane classed under dealers' demonstrators, and seven under flying school training also used for charter trips and scenic flights.

Planes For Private Use:

Planes classified under "Private Use" include those maintained at the field for non-commercial purposes, as distinguished from those used for hire, or some other form of direct revenue. In the private group are several planes owned by business concerns or their executives, used for "commuting" between branch offices of the organization. Others are used purely for pleasure, some owners flying only locally, and others making flights to various sections of the United States or even to neighboring countries.

Distinguished Private Flyer Based at San Francisco Airport:

Flyer of distinction based at San Francisco the past several years is Frank W. Fuller, Jr. His record-breaking flight to win the Bendix Trophy in the National Air Races of September 1937, placed him in the world's aeronautical spotlight. The flight from Los Angeles to Cleveland was made in 7 hours, 55 minutes, and the entire flight to the east coast in 9 hours, 35 minutes. Since that time he has made several other record-breaking flights in his high powered "Seversky" monoplane. The records include San Francisco to Salt Lake City (2 hours, 17 minutes); Vancouver, B. C. to Agua Caliente, Mexico (4 hours, 54 minutes); San Francisco to Los Angeles (1 hour, 7 minutes); Los Angeles to Kansas City (4 hours, 58

EMERGENCY BOAT
"Cavu-1," new emergency boat is in constant readiness at San Francisco Airport. Used primarily to rescue fishermen and duck hunters from Bay waters.

minutes), made on the Bendix Race flight; San Francisco to Seattle (2 hours, 32 minutes); Vancouver, B. C. to the Oakland "International Air Races" this summer (3 hours, 9 minutes). These flights have been given widespread publicity, and have served as a healthy stimulant to private flying in the realm of sports.

Flying Schools:

Eight flying schools are in operation at the Airport. Summit Flying School operates two "Fleet" airplanes, Marshall George Flying Service uses a low-wing "Kinner," Lyon Air Services use a "Ryan S-T-A" and a "Taylorcub," Clyde Preston a "Rearwin," Ted Airheart a "Pitcairn," Harry Ayres a "Taylorcraft," Jack Conley a "Taylorcub," and George B. Lewis a "Travelair." Student enrollment has increased considerably during the past fiscal year.

Aircraft Agencies:

Seven aircraft sales agencies are located at San Francisco Airport. Mouton & Clyde, Inc., represent the "Beechcraft" factory, and the "Seabird"—stainless steel amphibian of Fleetwings, Inc. The "Stinson" company is represented by Franklin Rose Aircraft, Inc.; the "Howard" by Howard Airplane Sales Company; the "Grumman G21" by Frank W. Fuller, Jr.; the "Pipercub," and the "Ryan" by Lyon Air Services, the Ryan being under the sectional distributorship of Franklin Rose Aircraft.

Mouton & Clyde also represent Air Associates in the sale of RCA radio equipment.

Charter Trips and Scenic Flights:

In the field of charter work and scenic flights several planes are used which are classified above in other branches. In addition to one ship placed solely under the "Charter" heading, seven of the Flying School ships are used also for either charter flights or scenic trips over the Bay region. One plane listed as a Dealer's Demonstrator is also engaged in this type of operation. Charter trips to any section of the country may be arranged at the Airport, and offer particular advantage to the traveler who wishes to reach an off-airway destination in a short time. The scenic trips over San Francisco and the Bay area provide one of the most beautiful sights to be viewed from the air in any section of the world. To see from above our "City of seven hilled splendor," flanked on all sides by scenes of natural beauty and world wide renown, is a breathtaking experience to a first-flight passenger, and an ever inspiring sight to those who go aloft again and again. It promises to be a popular pastime for Exposition visitors next year.

Flying Club:

The San Francisco Flying Club maintains a "Fairchild" four-passenger plane at the Airport for exclusive use of its members.

Skywriter:

Aerial "signboards" are frequent sights over San Francisco. The only skywriter in this section of the country is Thor Polson, veteran flyer based at San Francisco Airport. At altitudes of 12,000 to 14,000 feet he spells out in smoke the signs desired by business organizations which take advantage of his services.

OTHER TENANTS

United Air Lines:

A ticket office in the lobby of the Administration Building is maintained by United Air Lines. The personnel consists of a Chief Passenger Agent and seven assistants. The Air Line's reservations office was located at the Airport until the spring of 1938, when it was moved to the United traffic office in San Francisco. The move was made to coordinate more closely the work of the two offices, and in order that the ticket sales personnel might have convenient access to the reservations department.

TWA, Incorporated:

A complete operations base is maintained at San Francisco Airport by TWA, Inc. One entire hangar, together with shop space, is under lease by the airline, at which spot the large transport planes, the radio apparatus, maintenance equipment, and store rooms are located. In the lobby of the Administration Building a ticket office is maintained, and a suite of specially designed rooms on the mezzanine floor provides office space for the TWA management, flight personnel, and general operations headquarters. Although the airline's radios are installed in Hangar No. 4, the sets are operated from the Administration Building headquarters by remote control.

Pacific Airmotive Corporation:

The Airport's airplane and engine maintenance building is leased by Pacific Airmotive Corporation, the Pacific Coast's leading airplane sales and service organization. Parts for all models of aircraft and motors are included in the stock

of this company, and all types of aircraft engine and propeller repair work are capably handled.

Airdrome Transport:

Limousine service to meet all scheduled aircraft, and special service for transient planes is provided by Airdrome Transport Division of The Gray Line, Inc. Deluxe equipment is used exclusively, and a highly efficient and comfortable service is maintained. During the year the concern changed ownership, the Graylines company acquiring the interests of Mr. Joseph Ferrant.

Coffee Shop and Refreshments:

At the close of the fiscal year bids were being called for leasing to a reliable tenant the Airport's coffee shop, cocktail lounge, and concession counter. Providing these rooms with appropriate furniture and fixtures was completed on April 30, 1938. Philippine mahogany was used throughout, and beautiful effects have been attained. The concessions will be occupied in the near future, but the management insists on having but one tenant for the three, and the party or firm which acquires the lease must have prestige in this line of business.

Oil Companies and Mechanics:

Licensed aircraft mechanics are available at all times for work on fixed base and itinerant aircraft. Three oil companies have representatives on the Airport for the sale of aviation fuel supply. The service is available twenty-four hours a day.

ENGINEERING AND CONSTRUCTION WORK

Construction Progress at San Francisco Airport:

During the fiscal year 1937-1938, the total cost of the construction work at San Francisco Airport was $451,072.11, divided into $58,910.22 for contract work, $102,377.76 for Sponsor's contribution to Works Progress Administration (W. P.A.) Projects, and $289,784.13 for Federal contribution to W.P.A. Projects. The detail of the expenditures is shown in the table attached, and described in the sections below more particularly itemizing each element of the project.

The period was devoted primarily to two objectives: first, completion of, and work supplementary to, work formerly undertaken; and, second, initiation of a new airport expansion program.

The portions of the work falling in the first category are W.P.A. Project 6683, and Contract No. 39, under which the W.P.A. work formerly undertaken on the landing field was completed; and Contracts Nos. 41 and 42, and all informal and purchase contracts (except the contract for the emergency boat) under which the Administration Building was equipped, and the major portion of the unfinished rooms completed ready for occupancy.

The increased size, weight and wing loading of the new transport airplanes made it mandatory to materially increase the lengths of the runways, to augment the lighting and signal equipment, to increase the thickness of the pavement surfacing, and to add new and larger terminal facilities. For that reason, an airport expansion and improvement program became necessary. To finance the program, a $2,850,000 bond issue was submitted to the electorate in November, 1937, and was approved. Contracts Nos. 43, 44 and 45, and W.P.A. Project No. 8718 form a portion of this new expansion program.

Contract No. 39—Earth and Rock Fill:

Contract No. 39 for constructing earth and rock fill in the seaplane port area was completed. The work done during the fiscal year is reported below under W.P.A. Project 6683, item 16.

Contract No. 41—Finishing Office Rooms and Other Improvements to Administration Building (P. W. A. Project 1132-10E [R]):

In the general construction contract (No. 38) for the Administration Building, certain rooms were left unfinished, even some partitions being omitted, thus permitting the arrangement and finish to be determined later to suit tenants. Under Contract No. 41, seven rooms on the westerly side of the second story of the Administration Building were completed, and miscellaneous work was done elsewhere in the building, at a contract cost of $5,331.00. The rooms are finished with partitions of metal lath and plaster, Philippine mahogany woodwork, and linoleum floor covering, all in keeping with other interior finish of the building. A vertically sliding screen was constructed over the future check room counter, door numbers were painted on all doors, brass tags bearing the door and key numbers were placed on all doors in the building, metal water drips were placed over all second story windows, electrical work on the westerly side of the second story and receiving stations of the pneumatic tube system were installed in locations to suit the actual requirements of tenants.

The three offices at the northwest corner of the building have been occupied by Transcontinental and Western Air, Inc. offices, and an option has been given to that firm on the adjacent office southerly.

Contract No. 42—Finishing Rooms in the First Story of the Administration Building (P. W. A. Project 1132-10F [R]):

Under Contract No. 42, the Refreshment Room (cocktail lounge) was finished and the bar and back-bar constructed, the counter and back-counter were constructed in the Coffee Shop, and kitchen cupboards and some of the kitchen equipment were constructed, all at a cost of $6,854.00.

The Refreshment Room was finished with oak paneled wainscot, oak trim, and oak bar and back-bar, all in harmony with the Spanish architecture of the building. Border-stripped marbelized linoleum floor, convectors and grilles of the heating system, lighting fixtures, cocktail stations, refrigerators, ice water dispenser, and bar plumbing were constructed, so that now all fixed equipment is in place except the refrigeration machine itself. The pipe work and wiring for the refrigeration machine have been constructed.

In the Coffee Shop, the counter, counter stools, back-counter, refrigerators, ice-water dispenser, and all necessary plumbing were constructed. The counter and back-counter are of oak, finished to harmonize with the main waiting room.

The water heater, dish-washing sink, and mechanical dish-washer, pot sink, refrigerator cupboards, and piping and electrical connections for the kitchen and coffee shop refrigerators were constructed in the kitchen. The refrigeration machine, vegetable sink, steam table, range and hood were not installed. With these exceptions, all fixed equipment has been placed in the kitchen and coffee shop.

CURRENT CONTRACT AND PROJECT DATA, FISCAL YEAR 1937-1938

Cont. or Proj. No.	Contract or Project Designation	Contractor	Date Commenced	Time Allowed Days	Date Completed	Amount Bid or Estimate	Amt. Expended During Fiscal Year	Fund
	Construction Contracts							
38	Administration Building PWA Proj. 1132-10B	Reed & Reed	June 24, 1936	174	May 30, 1937	$141,799.00	$3,021.54a	Utilities Improvement
39	Earth and Rock Fill	T. O'Brien	May 5, 1937	100	Aug. 6, 1937	38,500.00	4,943.01a	Sponsor's Contribution for WPA
41	Finishing Office Rooms & Other Imps. to Admin. Bldg. PWA Proj. 1132-10E-(R)	Frank J. Reilly Co.	Feb. 4, 1938	80	Apr. 20, 1938	5,331.00	5,331.00	Utilities Imp.
42	Finishing Rooms in First Story of Admin. Bldg. PWA Proj. 1132-10F-(R)	Mangrum-Holbrook & Elkus	Mar. 11, 1938	50	May 20, 1938	6,834.00	6,854.00	do
43	Exploration & Dredging	A. S. Dutra	Mar. 12, 1938	40	Apr. 7, 1938	6,084.65	6,580.65	1938 Bonds
44	Earth & Rock Fill (Levee for Landing Field Exten., etc.)	Macco Construction Co.	May 23, 1938	300	Not Complete	325,571.25	14,853.98	do
45	Dredging Channel for Levee	A. S. Dutra	May 2, 1938	180	Incomplete	8,360.00	2,406.63	do
	Contracts under $1000 and Purchaser of Supplies Contracts							
	Material for Radio and Public Address System	C. C. Langevine Company	.....	...	Oct. 26, 1937	4,912.47	4,912.47	Airport Equipment
	Furnishing Labor & Tools for Installing Radio & Public Address System	Lynn and Heffernan	.....	30	Oct. 29, 1937	648.76	648.76	do
	Inter-Office Phone System	Webster Elec. Inter-Communication System	.....	...	Nov. 19, 1937	1,270.00	384.71c	do

	Electric Signs in Administration Building	Lynn and Heffernan	.....	25	Dec. 21, 1937	227.00	227.00	do
	Three Scales in Admin. Bldg. Ticket Counter	Howe Scale Co.	.....	40	Dec. 29, 1937	981.00	981.00	do
	Glass & Metal Grille for Ticket Counter	Federal Ornamental Iron & Bronze Co.	Sept. 24, 1937	45	Dec. 8, 1937	734.00	733.96	do
	Schedule Board for Administration Building	Building Directory Co.	Dec. 7, 1937	100	Jan. 19, 1938	767.35	767.35	do
	Cont. Room Operator's Desk	Mullen Mfg. Co.	Nov. 16, 1937	20	Dec. 24, 1937	170.98	170.98	do
	Anemograph Tower (Materials Only)	Various	Various	Various	Oct. 16, 1937	424.13	424.13	do
	Venetian Blinds for 2nd Story, Admin. Building	D N & E Walter Co.	Oct. 10, 1937	12	Dec., 1937	376.05	375.55	do
	Acoustical Treatment, Control Room	Western Asbestos Co.	Oct. 13, 1937	7	Oct. 15, 1937	298.00	298.00	do
	Emergency Boat	Geo. W. Kneass Co.	.....	60	.....	4,995.50	4,995.50	do
	W.P.A. Projects							
6683	General Improvement of Airport	Day Labor Construction	Mar. 16, 1937	140	Feb. 15, 1938	109,843.00d 359,322.00	51,217.77d 174.077.16	City (various) Federal
8718	do	do	Apr. 25, 1938	548	Incomplete	2,818,400.00e 1,946,674.00	56,103.00ef 115,706.97f	City (various) Federal
TOTAL VALUE OF WORKS CONSTRUCTED DURING FISCAL YEAR							$451,072.11	

(a) Total expenditures on contracts on which payments were made prior to July 1, 1937: Contr. 38, $155,977.90; Contr. 39, $38,033.76.

(c) Plans and specifications were prepared and transmitted for work estimated to cost $1,270.00. Only a portion of the work contemplated was finally done.

(d) Contract No. 39 is included as portion of Sponsor's contribution to W.P.A. Project 6683. Total Sponsor's contribution to W.P.A. Project 6683, including the $4,943.01 paid on Contr. 39, was $51,217.77.

(e) Contracts 44 and 45 will count as part of this Sponsor's contribution. Amounts expended on these contracts are not included in the table above in the $56,103.00 reported as City's expenditure on W.P.A. Proj. 8718.

(f) Cost figures for W.P.A. Proj. 8718, for period reported, are subject to correction.

Lease for Coffee Shop, Refreshment Room, and Cigar Counter:

At the request of the Airport Manager and the Director of Property, a form of lease, the general conditions of which were dictated by them, was prepared for the coffee shop, the refreshment room, and the cigar counter in the new Administration Building. The lease is drawn for a period of ten years, and provides for the tenant furnishing all equipment not now installed. The lessee is to bid on the percentage of his gross receipts that he will pay as rental, with the provision that the minimum monthly rental shall be $200. Bids on the lease are to be received July 12, 1938.

Radio and Public Address System:

A radio and public address system was purchased and installed at a cost to the City of $4,912.47 for materials, and $648.76 for skilled labor for the installation of the materials. WPA Project 6683 furnished unskilled labor for the installation, furnished some of the conduit and other materials, and furnished and constructed the receiver house and antenna system located on the opposite side of Bayshore Highway from the Administration Building. The radio system is remotely controlled from a specially designed desk in the control tower of the Administration Building. Three crystal-controlled, two-frequency radio receiver sets are located in a house west of Bayshore Highway, with crystals ground for day frequencies of 5122.5 kc., 5592.5 kc., and 3120 kc., and night frequencies of 3147.5 kc., 3182.5 kc., and 3105 kc. Two all-wave airport ground station receivers (with remotely located antennae) are mounted in the radio desk in the control room, to serve as standby units to pick up calls coming in at other than the standard frequencies guarded by the remote crystal-controlled receivers.

The public address system has also the master control at the radio desk in the control tower. Auxiliary microphones for the system are located at the telephone P.B.X., at the ticket counter, in the airport manager's office, and at the passenger loading gate. Loud speakers are located in the main waiting room (2 speakers), passenger loading gate, cocktail room, coffee shop, women's lounge, men's washroom, east arcade (3 speakers), west arcade, telephone room, baggage room, field crew room, and one in each of the four hangars. The public address system is arranged so that all, or selected groups, of the loud speakers may be used at any one time.

Administration Building Equipment:

Informal contracts were prepared, contracts let, and construction completed for the following equipment for the Administration Building:

(1) Inter office phone system.

(2) Interior electrical directional signs for men's and women's toilets, baggage room, and telephone room.

(3) Three scales built into the main ticket counter for weighing passengers' luggage. The scales read from 0 to 100 pounds in one-ounce graduations, and are entirely concealed within the counter except for the top of the platform, and the weight indication which is projected by means of a light on a ground glass screen adjacent to the platform.

(4) Glass and Metal Grille mounted on the main ticket counter. The grille is of bronze construction with obscure glass panels, and has six wicket openings for ticket salesmen. It is designed to accommodate three major air lines.

MODERN TRANSPORT PLANE
Latest aviation equipment serves patrons at San Francisco Airport.

(5) An extruded bronze combination schedule board and building directory for the waiting room.

(6) Control Room operator's desk: This desk is of Philippine mahogany to match the control desk and radio desk in the control tower. It has a special illuminated panel for airline schedules and other pertinent information, a telephone P.B.X. for night use, and a typewriter compartment in addition to the usual desk drawers and top.

(7) Anemograph Tower: The City purchased the materials for a steel tower extending 12 feet above the top of the control room roof. This tower supports the anemograph (wind direction and velocity recording machine) instruments, and is so designed as to support auxiliary radio antennae. The location and arrangement of the tower are such as to secure more reliable information on surface wind direction and velocity than was practicable from its former location on the old administration building.

The materials purchased by the City were installed by Federal employees under WPA Project 6683.

(8) Venetian Blinds were installed in the 38 windows and 4 French doors of the second story of the Administration Building.

(9) Acousti-celotex 1¼ inches in thickness was installed on the control room ceiling, in order to improve the acoustics for better radio reception.

Emergency Boat:

Plans and specifications were drawn for a new emergency service boat of 35-foot length, 10-foot beam, 4-foot molded depth, 18-inch draft, 275 HP motor, and maximum speed of 17½ knots per hour. The boat was purchased at a cost of $4,995.50 from G. W. Kneass Co., and delivery made.

W. P. A. Project 6683:

During the fiscal year, the following work was accomplished under WPA Project 6683:

(1) Improvements of canals west of Bayshore Highway progressed but excavation of some canals was not undertaken due to lack of available WPA personnel. The sloughs were not filled, and the area was not leveled for the same reason.

(2) The old pole line that carried electrical energy to the drainage pump house was removed, thus eliminating one of the hazards to air navigation. The removal of this pole line was made possible by bringing an underground service to the pumphouse, extending south from the field lighting terminal building.

(3) Progress was made on leveling the landing field so as to afford better drainage to the inlets and drainage lines, and so as to produce a smoother, more stable landing field. Rock was hauled from the San Andreas quarry for this leveling operation.

(4) Field Lighting: Under this heading, the radio building, located on the westerly side of Bayshore Highway was constructed, conduit lines connecting it to the Administration Building installed, and unskilled labor for the installation of the radio and public address system furnished.

The switching and other equipment for the Field Lighting Terminal Building was procured and installed, thus completing the airport power substation, and gives the field a modern and reliable power distribution system for the first time. About 2,000 feet of duct line and 3,000 feet of main cable were installed in the power distribution system. The equipment in four concrete transformer vaults serving the outlying field flood lights, boundary lights, etc., was installed.

(5) To improve telephone service, a new duct line was constructed extending from the administration building to a point opposite the westerly end of the Seaplane Port approach road. The new cable will be installed in this duct line by the Pacific Telephone and Telegraph Company. It will be a 200 pair cable to the point where it reaches the easterly side of Bayshore Highway, at which point 100 pair will extend to the Seaplane Port, and 100 pair to the Landplane Port. The routing of the new line will materially shorten the distance to the South San Francisco exchange, and give improved service.

(6) Repair Roofs: The corrugated metal hangar roofs having shown leakage during last winter's rains, were repaired by calking seams with mastic on about 48,000 square feet of roof area. The composition roofing on the addition to Hangar No. 2 and on the Fire House was repaired, new flashing installed, and a flood coat of asphalt covered with gravel placed.

(7) A concrete foundation and appurtenant work for a 20 by 20 foot wash house was constructed about 23 feet westerly of the Machine Shop. This building will be used to house equipment for washing and cleaning motor parts, in order to keep inflammable liquids out of the Machine Shop.

(8) The public comfort station building was improved by installation of four urinals in the men's toilet, installation of two drinking fountains adjacent to the sidewalk outside of the building, replacing depreciated interior plasterboard wall covering with painted plywood, and by other miscellaneous work. In the sewage pump room, located in the same building, a one-ton trolley type chain block hoist was installed to facilitate pulling of the sewage pumps for maintenance and repair.

(9) About 3,400 square yards of sphaltic pavement was laid in the vicinity of the administration building, to form an automobile parking area. The armor coat on taxiway pavement, and on some of the runway pavement most subject to wear, was built up from a thickness of about ½ inch to about 2 inches.

(10) About 20,670 square feet of reinforced concrete pavement were constructed in the area west of the administration building, to better the condition where passengers arrive by automobile.

(11) The areas adjacent to the administration building, and between the airport buildings and the canal east of Bayshore Highway, were landscaped. About one foot depth of loam was spread on about 40,000 square feet of planting area, and lawn and other plantings placed. A subsurface irrigation system was installed, involving 3,340 feet of ⅜-inch to 1½-inch copper pipe, 480 feet of ½-inch to 2-inch galvanized pipe, 121 spray heads, plus numerous valves, hose connections, etc. The landscaping greatly enhanced the appearance of the airport building area, and the irrigation system made it possible to maintain the landscaping without additional personnel.

(12) A standard airport marker, consisting of a circle 200 feet in outside diameter and enclosed cross, was constructed at the easterly side of the landing field. The lines are formed of asphaltic pavement, 8 feet wide, painted white. A wind-indicator smoke pot in a concrete vault with steel cover was placed in the center of the marker.

White painted lines were placed across the runways at about 200-foot centers, in order to facilitate landing of airplanes.

Large numerals with enclosing circles, were painted at each end of each of the three runways in order to better traffic direction on the field. The runway end pointing in the most northerly direction is numbered (1), the next adjacent end traversing in a clockwise direction is number (2), and so on to number (6). A large number corresponding to the runway and the direction to be used for landings and take-offs, is posted in the control tower window where a pilot about to take off may read it, and the number is transmitted by radio to incoming pilots, in order to direct traffic to the proper runway and direction.

(13) A tower to support the anemograph instruments was erected on top of the control tower, and electrical connections run to the control room.

(14) Fencing was constructed along the westerly boundary of the landing field on the highway right of way line, except in the building area where the fence is so placed as to separate the apron and landing field from the public areas. The fencing extends from about 2,850 feet southerly of the main entrance to about 3,050 feet northerly of the entrance. The existing fencing within the building area was relocated and reconstructed in order to better facilitate handling of crowds. 1,900 feet of new 6-foot chain link fence, and 4,200 feet of new 6-foot galvanized fabric fence, were constructed, all supported by tubular steel posts set in concrete.

(15) About 2,400 linear feet of new drains, consisting of open joint vitrified pipe in gravel backfilled trenches, were constructed to improve the field drainage system.

(16) Under Airport Contract No. 39, which was done as a portion of the Sponsor's contribution to this W.P.A. Project, 13,417 cubic yards of earth and rock were hauled from the South San Francisco quarry and placed in the Seaplane Port area, to construct a portion of the seawall southwesterly to connect with the landing field extension levee. The Government furnished explosives for and blasted the earth and rock in the quarry, did road maintenance and other work in connection with this item.

(17) Much miscellaneous work was done that is not listed above, although generally appertaining to the items listed.

The total cost of this W.P.A. Project during the fiscal year was $225,294.93, of which the City furnished $51,217.77, mostly for materials, equipment, rental, and supervision, and the Federal Government contributed $174,077.16, of which $11,448.13 was for materials and equipment, and $162,629.03 was for labor.

All work on the project ended February 15, 1938, at which time the project was 72.23% complete as compared to the work covered by the project proposal. At the beginning of the fiscal year the project was 30.95% complete, so that 57% of the work accomplished was done during the fiscal year.

1938 Airport Bonds:

Up to this fiscal year, the largest airplanes using the field were the Douglas DC-2, with a wing span of 85 feet, gross weight 12,000 pounds, wing loading of 19.40 pounds per square foot, and stalling speed of 60 miles per hour; and the Boeing 247-D, with a wing span of 74 feet, gross weight 13,650 pounds, wing loading of 16.30 pounds per square foot, and stalling speed of 62 miles per hour. This year the Douglas DC-3 airplane was put in service, which has a wing span of 95 feet, gross weight 24,000 pounds, wing loading of 24.3 pounds per square foot, and stalling speed of 64 miles per hour. The Douglas DC-4 has been produced and soon will be placed in service, which has a wing span of 138 feet 3 inches, gross weight of 65,000 pounds, wing loading of 30.15 pounds per square foot, and stalling speed of 69 miles per hour. The Boeing 307 will also soon be in service, and has a wing span of 107 feet 3 inches, and gross weight of 43,000 pounds. Yet larger, heavier, and faster ships are being planned.

This trend in aircraft design has forced the City to increase the length of runways from 3,000 feet to 6,000 feet, and to place heavier pavements, improve the field drainage, construct larger hangars, and provide improved facilities. To meet the cost of these improvements, a $2,850,000 bond issue was approved by the voters in November, 1937. The construction of a Seaplane Port at San Francisco Airport was also included in the bond issue program.

The program includes the following:

(1) Reclamation of 315.6 acres, mostly from the tidal overflow areas of San Francisco Bay, lying easterly of the present field, making a total landing field area of 521.3 acres.

(2) Extend the east-west runway from its present length of 3,000 feet to 6,000 feet, extend the runway paralleling Bayshore Highway from 3,000 feet to 5,500 feet, and construct a new north-south runway 4,500 feet long. All are to have pavement 200 feet wide. The existing runway and taxiway pavements are to be increased in thickness and width.

(3) Procure necessary property for the expansion program.
(4) Construct drainage for the extended field.
(5) Construct a field lighting system for the extended field.
(6) Install radio equipment to facilitate control of traffic and landing in adverse weather.
(7) Construct a large new hangar.
(8) Construct a seaplane harbor and channel.
(9) Do much miscellaneous work appertaining to and supplemental to the above.

Work has been initiated on the project, and substantial progress made. This work is included in W.P.A. Project 8718, and Airport Contracts 43, 44 and 45.

W. P. A. Project 8718:

Project proposal for WPA project No. 8718 was filed January 3, 1938, and work was started on the project April 25, 1938. The entire construction program contemplated under the bond issue was included in this project, with the intention that all work not suitable to be executed by relief labor be contracted, and included as a portion of the Sponsor's contribution to the WPA Project.

In the project proposal, the total cost of the WPA project is estimated to be $4,765,074, of which the City is to furnish $2,818,400, and the Federal Government $1,946,674. Up to the close of the fiscal year, the City had expended $56,103.00, and the Federal Government $115,706.97, of which latter sum $11,771.69 was for materials and equipment, and $103,935.28 for labor.

The work accomplished was primarily paving and drainage on and adjacent to the existing landing field area, start of construction of a service building to house the airport maintenance shops and equipment, progress on the construction of three drainage control gates, and miscellaneous other work connected with the above.

Progress on contract work counted as Sponsor's contribution to the WPA project is reported separately below.

Contract No. 43—Exploration and Dredging:

Under this contract subsurface exploration was done to determine the character of the material to be encountered in the area covered by the landing field extension east of the present field, and to explore the shell beds from which it is proposed to secure material for filling the runway and some other areas intended for immediate use in the landing field extension. The cost of this work was $2,666.00.

Two Porter-type soil samplers, used on the above work, were delivered to the City for further use on exploration work in connection with other phases of the project, at a cost of $1,714.65.

22,000 cubic yards of dredging was done under the contract, primarily to start channel excavation for levee construction around the landing field extension, and also to provide a channel for the new emergency boat. The cost of this dredging was $2,200.

Work started under this contract on March 12, and was completed April 7, 1938.

Contract No. 44—Earth and Rock Fill:

Contract No. 44 provides for placing 520,000 cubic yards of earth and rock fill, 400,000 cubic yards of which are intended for use in construction of 9,000 linear feet of levee around the landing field extension, and 120,000 cubic yards of which are intended for use in reclaiming 32 acres of land located northerly of the present field, and for other miscellaneous filling operations.

Work started May 23, 1938, and up to the close of the fiscal year 26,500 cubic yards of material had been placed.

Contract No. 45—Dredging Channel for Levee:

Contract No. 45 provides for dredging 80,000 cubic yards of material, primarily for excavating a channel for levee construction, around the landing field extension. Work started May 5, 1937, and up to the close of the year 23,300 cubic yards of dredging had been completed, at a cost of $2,406.63.

P. W. A. Project:

When it appeared that new Federal financing might be provided under which the Federal Administration of Public Works (P.W.A.) would contribute 45% of the cost of work, a P.W.A. Project application was prepared. It was filed in May, 1938. It contemplates an estimated total expenditure of $2,196,500, of which the City would contribute $1,208,075, and the Government $988,425.

Such Federal assistance would permit further extension of the construction program beyond that previously contemplated. The PWA project includes the following:

(1) Landing field extension fill, leveling of the fill and earth and rock blanket over the areas intended for immediate use.
(2) Reclamation of 17.5 acres at southwest corner of the landing field.
(3) New hangar with airplane shop space.
(4) Hangar to adjoin present machine shop.
(5) Additions to present administration building.
(6) Passenger entrance building to form a shelter where airplanes unload.
(7) Field lighting and signal system.
(8) Main storm water sewer.
(9) Drainage pump station.
(10) Boathouse, with wharf, for rescue boat.
(11) Outfall sewer.
(12) Utility service to new buildings (water, sewage, power, gas, and telephone).
(13) Standby power service connection.
(14) Garage.

Coast Guard Station:

A site fronting on the seaplane harbor and on the landing field has been selected for a proposed United States Coast Guard Aviation Station. The site consists of 20.53 acres, at present mostly reclaimed. It occupies the central portion of the seaplane harbor frontage at the westerly side of the harbor. It appears acceptable to the Coast Guard, and does not interfere with landing field operations. It is proposed to deed this land to the United States, together with the right to use in common with others an access road from the site to Bayshore Highway, the seaplane harbor and channel, and the airport landing field.

The Federal Government will make $137,000 available as one-half the estimated cost of dredging the seaplane harbor and channel, and will maintain the channel, subject to the following conditions:

(a) Contribution by the City of $137,000 to the Federal Government for half of the dredging costs;

(b) That the City construct suitable works for the protection of the harbor;

(c) That the City furnish, free of cost to the United States, necessary rights of way and suitably bulkheaded spoil disposal areas for the material to be dredged in construction of the harbor and channel, and in subsequent maintenance work;

(d) That the City furnish, free of cost to the United States, a suitable site for the proposed station, with frontage on the seaplane harbor, and having satisfactory access by land to the public highway system and to the runways of the airport landing field.

Engineering Work:

All engineering and architectural work for the airport was done by the Bureau of Engineering of the Public Utilities Commission, of which L. T. McAfee is Utilities Engineer, L. W. Stocker is Chief Civil Engineer, and George D. Burr and A. J. Wehner are respectively designing engineer and construction engineer for the airport work.

TRAFFIC CONTROL TOWER

In the promotion of both safety and efficiency in handling air traffic at major air terminals much emphasis is being placed on Traffic Control Tower procedure. So much so that a code of regulations has been promulgated by the Bureau of Air Commerce to govern all phases of Control Tower operation. Individual chapters of the new Civil Air Regulations have been issued on the certification of both Control Towers and Control Tower Operators. The importance of this phase of airport operations may be understood from the following letter, addressed to the Mayor of San Francisco by Colonel J. Monroe Johnson, Acting Secretary of Commerce.

DEPARTMENT OF COMMERCE
Office of the Secretary
Washington

March 8, 1938.

Honorable Angelo J. Rossi,
Mayor, City of San Francisco,
San Francisco, California.

My dear Mr. Mayor:

Your attention is invited to the problems arising from greatly increased aircraft movements at busy airports, such as your municipal airport, under weather conditions which introduce a collision hazard unless some form of traffic control is exercised. You undoubtedly share our aversion to the promulgation of any regulations until the need for them has been established beyond question. However, a study of air traffic conditions at your airport indicates the fact, as gratifying to us as I am sure it is to you, that the volume of air traffic around your city has increased to the point that air traffic congestion exists sufficient to require that in the interests of safety the situation must be recognized and remedial measures applied. We have, therefore, included the San Francisco Airport in a list of control airports, along with other busy air termini, in the vicinity of which flight operations must be regulated in some manner.

Our revised air traffic rules, effective March 31, 1938, require the cessation of contact flight operations at control airports when the visibility is less than three miles, unless a certified airport control tower operator is on duty in a radio equipped airport control tower at your airport. This limitation of operations at control airports will not apply, of course, to aircraft operating in accordance with instrument flight rules. Obviously, pilots operating out of your airport will be subject to whatever additional restrictions you care to exercise through your airport management.

Since your airport now operates a radio-equipped control tower, the only requirement which your personnel will be asked to meet in order to obtain for your airport the relaxation of the three mile visibility rule will be to obtain federal certification to the fact that they are trained control tower operators.

We are sure you share our interest in the promotion of greater safety for all aircraft operations. We sincerely hope that continuance of the splendid cooperation you have given us in the past will enable proper safeguards to be set up for the ever increasing air traffic to and from San Francisco airport.

Sincerely yours,

J. M. JOHNSON,
Acting Secretary of Commerce.

Subsequent to receiving this letter, the Airport management instructed seven members of the Airport personnel to prepare for examinations for "Airport Control Tower Operator's Certificate of Competency." Qualifications demanded of applicants include: (1) passing a physical examination equivalent to that required of a transport pilot; (2) qualified experience in traffic control tower duties; and (3) passing an examination, both oral and written, on the following subjects:

Air Traffic Rules, Chapter 60 of Civil Air Regulations.

Airway Traffic Control Procedure.

Local Airport Regulations.

Local Airline Operation Procedure and Airline Schedules.

Air Navigation Facilities (radio facilities, airports and landing fields, airway light beacons) within a 200-mile radius of the Airport.

Teletype Weather Symbols and Weather Sequences.

Airline and Itinerant Radio Frequencies and Radio Procedures.

At the close of the fiscal year, word has been received that the examinations will be given during the month of July, 1938. All applicants at San Francisco Airport have successfully passed the physical examinations, have complete qualifications from the standpoint of experience, and are prepared for the written and oral examinations.

Control Tower Operation:

Calls from aircraft are ordinarily received in the Tower when the planes are some ten to twenty miles from the field. Traffic instructions are then broadcast to the pilot, advising him of wind and weather, the positions of other planes in the vicinity, and the prevalence of any obstructions on the landing area. Final "landing clearance" is given as the plane approaches the field boundary. During busy hours, and particularly in inclement weather, pilots may be requested to circle the field at specified altitudes until their respective turns come for landing clearance.

In the case of departing aircraft a "flight plan" is submitted to the Control Tower, consisting of twelve pieces of information regarding the proposed flight. This plan of flight is transmitted by the operator to the Airway Traffic Control Station of the Bureau of Air Commerce, which agency keeps track of all aircraft on the civil airways. Means of communication is by interphone provided by the Bureau. Approval or disapproval of the flight plan is received, and the pilot is advised accordingly. A lengthy chapter of the new Civil Air Regulations is devoted to Air Traffic Rules, and familiarity with this chapter is one of the principal qualifications of a Control Tower Operator.

WEATHER DEPARTMENT

With designation of San Francisco Airport as a "Control Airport" effective March 31, 1938, weather observers at this station were issued instructions by the Chief of the U. S. Weather Bureau to classify each hourly and special weather observation according to the Air Traffic Rules of the new Civil Air Regulations. Three classifications of weather are specified therein, and flight of aircraft on

the Civil Airways and through Control Zones of Intersection are governed by the class in which the official weather report falls. The three classifications are:

Contact: Weather suitable for contact flight.

Instrument: Weather requiring observance of instrument flight rules.

Closed: Take-off and landing of non-scheduled civil aircraft suspended.

Each classification has definite weather limitations which govern the observer's decision in classifying the report.

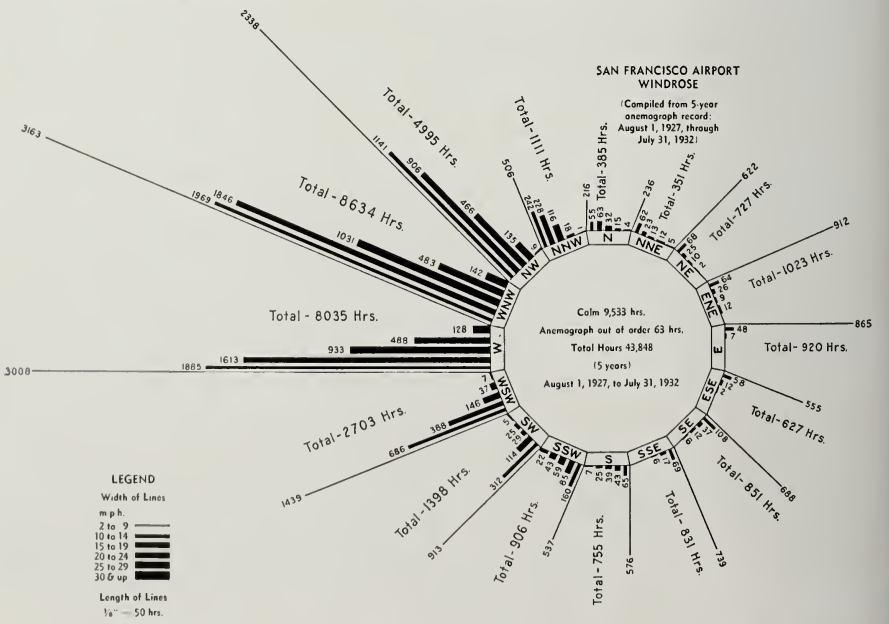
Weather Information Available:

The Airport Weather Bureau teletype on the Bureau of Air Commerce circuit continues to provide weather reports from all sections of the continent and the North Pacific Ocean. Pilots frequenting the Weather office, located in the Control Tower, and those who contact the office by telephone, are given current weather reports along any desired route, including spot weather reports, upper air wind reports, and airway forecasts. Synoptic weather maps are available to provide a "picture" of the atmospheric situation, and to indicate graphically the movement of storms and air masses. The area covered by reports and maps includes the United States, Canada, Alaska, and the North Pacific.

Radiometeorograph Observations:

A new type of observation, one which is destined to pave the way for widespread improvement in weather forecasting, is to become available in the San Francisco Bay region beginning in July, 1938. It is a "radiometeorograph" sounding, to be taken daily by the U. S. Weather Bureau. The sounding will provide readings of temperature, pressure, and moisture content of the atmosphere up to a height of some 50,000 to 80,000 feet above sea level.

The radiometeorograph is a small, specially constructed radio transmitter mounted in a light cardboard box along with devices for indicating the condition



of the desired atmospheric elements. The entire unit weighs only two pounds, and is carried aloft by a helium-filled free balloon which measures about 5 feet in diameter when released. The readings indicated by the enclosed devices are periodically transmitted by radio signals during the balloon's ascent, and a radio receiver tuned to the same frequency (4.5 meters) on the ground picks up the "message."

As the balloon ascends it expands, due to decreasing atmospheric pressure, until it finally bursts, after which the radiometeorograph is lowered to earth by means of a small parachute. Notice of "Reward" is printed on each cardboard box containing the mechanism, which may be claimed by anyone finding and returning the apparatus.

This new sounding replaces the observations formerly taken in the Bay region by an airplane. Advantages of the radio mechanism are that it can be sent aloft during all kinds of weather, it provides readings up to 10 to 15 miles above sea level whereas the airplane went only to a height of 3 miles, and reception of the information is instantaneous in the Weather Bureau Office on the ground.

The radiometeorograph will prove a boon to the development of substratosphere, "over weather" flying, as accurate data well above the contemplated flying levels will now be available for study purposes. Seven Weather Bureau stations in the United States will start the observations in July, 1938, and the number will be greatly increased a year hence as Federal funds become available.

SAFETY

Maintaining its enviable safety record, San Francisco Airport has passed through the 1937-38 fiscal year with no record of accident. Although 53,394 passengers boarded or deplaned at our terminal in the scheduled operations of United Air Lines and TWA, no accident whatsoever occurred. These figures do not include "through" passengers on the airlines, nor do they include the numerous transient passengers in privately owned non-scheduled aircraft, nor the thousands of landings and takeoffs with passengers made by planes based at San Francisco Airport. That no accident involving injury occurred is ample evidence of the fact that aviation provides a safe means of transportation, that Bureau of Air Commerce and local field rules are carefully enforced by the management, and the airport personnel is composed of highly efficient employees.

AIRPORT PERSONNEL

The Airport personnel of the past fiscal year has consisted of a Manager, Mr. B. M. Doolin; an Assistant Superintendent, Mr. H. S. Messersmith; a Meteorologist, Mr. E. P. Sullivan; four Control Tower Operators, three Crew Chiefs, one Clerk-Stenographer, one Maintenance Chief, six Airport Attendants, and three janitors.

Qualifications demanded of the personnel at a major air terminal are annually becoming higher. Ample proof of this fact is found in the new Civil Air Regulations of the Bureau of Air Commerce, which sets forth stringent rules and regulations governing all branches of the aviation industry. Safe, efficient operation of aircraft depends not only on the flying personnel, but likewise on the ability and application of men on the ground. Transport planes and privately owned aircraft as well are costly pieces of equipment, and carry a precious cargo—human lives. With the advent of the new 4-motored transports the responsibilities of the Airport personnel will be greater still, for the cost of such a ship will be around $300,000.

Seven members of the personnel are Airway Weather Observers, and about three-fourths of the men are licensed radio-telephone operators. Accredited First Aid cards of the American Red Cross are held by most of the Airport employees, the object being to lend assistance in accident cases on the Bayshore Highway adjoining the Airport.

EVENTS

Two principal events were staged at San Francisco Airport during the fiscal year, as far as participation by the general public is concerned. One was the program to celebrate the first scheduled departure of TWA, and the other was a program arranged for the dedication of the New Administration Building.

Program Honors TWA:

The Airport exercises in honor of TWA brought to a fitting climax a program spread over several days in San Francisco to welcome the airline back to our City. It was arranged by Mayor Angelo J. Rossi's Citizens' Committee. The first air transport plane was scheduled to depart at 3 p. m., September 5, 1937. Ceremonies were held at the Airport from 2 to 3 o'clock on that afternoon. Throngs of enthusiastic San Franciscans attended the program, which was also broadcast to the radio world.

Participating in the exercises were Mayor Rossi; Jesse Colman, Committee Chairman; Lewis F. Byington, President of the Public Utilities Commission; Jack Frye, President of TWA; John B. Walker, Vice-President of TWA; Emory B. Bronte, Chairman of the Aviation Committee of the Chamber of Commerce; Philip F. Landis, President of the Junior Chamber of Commerce, and a group of midwest and eastern Senators. Mrs. Clarence M. Young severed the golden chain which bound the plane to the loading ramp.

Members of the Committee's Executive group were Emory B. Bronte, Chairman; R. H. Wellington, Vice-Chairman; B. M. Doolin, San Francisco Airport Manager; Michael C. Casserly, Henry Eickhoff, Jr., and Randolph C. Walker.

Administration Building Formally Dedicated:

On the afternoon of October 24, 1937, a program and air show was staged at San Francisco Airport to formally dedicate the new $160,000 Administration Building. The aerial program included a speed demonstration by Frank W. Fuller, Jr., winner of the Bendix Trophy in the National Air Races last year; a parade of ancient to modern transport planes by United Air Lines; a safety demonstration by a novice flying a Stearman-Hammond "Model Y" (a radio announcer who was piloting a plane for the first time and broadcast from the ship his reactions); and smoke writing by veteran Thor Polson.

Thousands of spectators were present on the occasion, and the entire program was broadcast over an NBC hookup.

Addresses were delivered by the following men, prominent in public life and aviation circles: Corrington Gill, Assistant National Administrator of WPA; Angelo J. Rossi, Mayor of San Francisco; Lewis F. Byington; A. D. Wilder, State Director, Federal Emergency Administration of Public Works; Emory B. Bronte, and B. M. Doolin.

During the afternoon the Administration Building was thrown open to public inspection for the first time.

WEATHER DATA

Fiscal Year 1937-1938

	TEMPERATURES					PRECIPITATION		WIND		NUMBER OF DAYS			
1937	Average Daily Maximum	Average Daily Minimum	Average	Absolute Highest	Absolute Lowest	Total	Greatest in 24 hours	Prevailing Direction	Average Velocity	Clear	Partly Cloudy	Cloudy	Rain (.01 or more)
July	70.4	52.3	61.3	80	48	Trace	Trace	NW	13.7	22	9	0	0
August	69.7	49.9	59.8	84	45	Trace	Trace	NW	13.1	28	3	0	0
September	71.3	51.9	61.6	90	46	Trace	Trace	WNW	11.0	17	9	4	0
October	71.5	50.9	61.2	88	44	0.70	0.37	WNW	8.6	18	7	6	5
November	64.2	46.7	55.4	74	40	2.57	1.07	WNW	7.9	9	12	9	8
December	60.9	42.2	51.6	70	36	4.14	1.85	WNW	6.8	14	6	11	6
1938													
January	58.2	41.5	49.8	69	36	2.04	0.45	SE	8.3	10	12	9	10
February	59.2	44.1	51.7	73	35	8.31	1.58	SSW	10.5	4	10	14	17
March	58.2	44.4	51.3	70	36	6.50	1.29	WNW	12.1	5	9	17	19
April	60.7	46.4	53.6	79	39	1.32	0.80	WNW	13.4	6	11	13	5
May	64.7	47.5	56.1	84	42	0.02	0.02	WNW	14.2	14	11	6	1
June	67.4	49.2	58.3	76	45	Trace	Trace	WNW	14.0	19	7	4	0
Fiscal Year '37-'38	64.7	47.2	56.0	90	35	25.60	1.85	WNW	11.1	166	106	93	71

SAN FRANCISCO AIRPORT

BALANCE SHEET—JUNE 30, 1938

ASSETS

PROPERTIES:

This is the cost of constructing and equipping the Airport, exclusive of W. P. A. Of the total, $1,652,440.10 is for completed projects, $301.015.20 for work not yet completed and $210,000.00 for land in use but not as yet paid for..... $2,163,455.30
Estimated loss due to wear and tear..... 51,652.72

$2,111,802.58

CASH:

We have cash on deposit with the Treasurer of the City and County of San Francisco totaling $615,854.61. Of this, $11,791.20 is to pay wages and salaries, materials and supplies and maintenance costs necessary for the operation of the Airport; $596,-723.41 is to pay contractors and for materials for new construction work; $7,140.00 is for payment of Bond interest; and $200.00 is available as a Revolving Fund for small purchases.... 615,854.61

ACCOUNTS RECEIVABLE:

This is the amount due on open accounts from tenants for rental of hangars, shop, etc., and for handling charges less a reserve of $4,500.00 to offset any uncollectible accounts, leaving a net figure of..... 6,381.27

INTER-FUND ACCOUNTS RECEIVABLE:

This is the amount due from the General Fund for apportionment of Taxes not yet collected..... 3,429.13

DEFERRED CHARGES:

Of the total of $333,394.98, $1,319.27 is the amount expended for Materials and Supplies in stock, not yet used; $2,566.77 for prepaid insurance, and $329,508.94 for uncompleted contracts and other commitments..... 333,394.98

$3,070,862.57

LIABILITIES

BONDED DEBT:

Money borrowed on Bonds for additions and improvements. Of the total of $702,000.00, $52,000.00 will be repaid December 1, 1938. The balance $650,000.00 represents a partial sale of $2,850,000.00 recently authorized, of which $285,000.00 will be repaid each year commencing January 1, 1940..... $702,000.00

BOND INTEREST PAYABLE:

Accrued, not due: $6,500.00 represents six months' interest on one lot of bonds maturing July 1 and January 1 of each year and $173.33 is one month's interest on one lot of bonds maturing December 1, 1938..... 6,673.33
Matured Coupons Unpaid: This is the money due Bond Holders for interest coupons not yet presented for payment..... 640.00

LAND PURCHASE COMMITMENT:

Land costing $1,050,000.00, of which $840,000.00 has been paid to date, at the rate of $105,000.00 per year..... 210,000.00

ACCOUNTS PAYABLE:

This is what we owe on uncompleted contracts and for materials and services contracted, but unpaid..... 362,229.63

INTER-FUND ACCOUNTS:

We owe to other City funds for materials and work performed, not yet paid..... 9,375.24

DEFERRED CREDITS:

This is the amount of expenditures made by the Public Utilities Improvement Fund for work now under construction..... 211,197.53

SURPLUS:

This is the equity of the people of San Francisco in the San Francisco Airport. It represents the amount that the present value of the properties exceeds the outstanding obligations..... 1,568,746.84

$3,070,862.57

SAN FRANCISCO AIRPORT
INCOME ACCOUNT

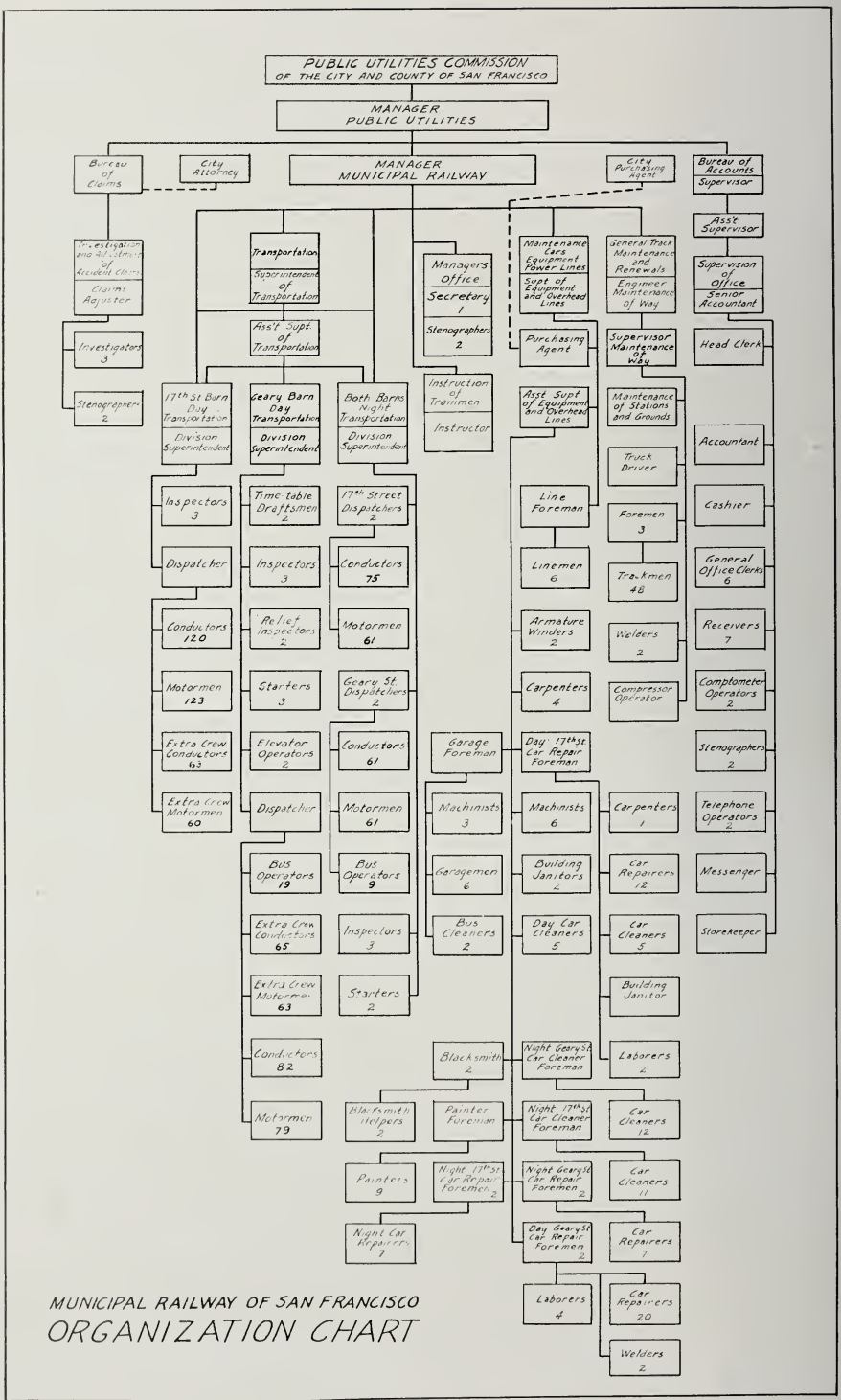
	For the Year Ended June 30th, 1938	1937
REVENUES		
Rentals—Hangars	$13,002.97	$10,499.82
Rentals—Shop	3,756.20	3,015.80
Rentals—Garage	.....	7.00
Rentals—Office	1,372.88	1,418.00
Rentals—Lockers	73.00	81.00
Gasoline Sales Commission	933.84	1,191.15
Passenger Taxes	.....	2,981.20
Handling Charges	44,562.40	11,386.50
Telephone Service	607.19	2,672.34
Other Income	329.06	427.00
Total Revenue	$64,637.54	$33,679.81
EXPENSES		
Salaries—Permanent	$43,644.98	$16,427.84
Salaries—Temporary	290.00	21,270.80
Wages	.....	290.00
Gas and Electricity	7,301.92	6,258.04
Telephone, Telegraph, Postage	4,379.54	5,216.88
Materials and Supplies	4,823.20	3,058.01
Provision for Bad Accounts	600.00	600.00
Provision for Depreciation	24,000.00	9,600.00
Traveling	123.25	544.40
Transportation—Employees	3,422.18	2,746.24
Maintenance and Repairs—Buildings and Structures	579.21	30.27
Maintenance and Repairs—Autos	1,096.39	1,278.69
Maintenance and Repairs—Miscellaneous Equipment	646.74	455.33
Water	.....	656.20
Insurance	2,327.42	290.59
Miscellaneous Contractual Services	1,509.10	1,689.21
Services—Bureau of Engineering	787.32	.....
Taxes	2,858.04	1,966.19
Bond Interest	2,946.66	5,026.67
Contributions to Retirement System	1,469.12	1,187.49
Miscellaneous	190.89	750.00
Total Expense	$102,995.96	$79,342.85
Net Loss	$38,358.42	$45,663.04

SAN FRANCISCO AIRPORT

SURPLUS ACCOUNT
FOR THE YEAR ENDED JUNE 30, 1938

Balance—June 30, 1937			$1,403,916.16
Contributions:			
From General City	$197,956.88		
From Emergency Reserve Fund	2,100.00	$200,056.88	
Uncollected portion of 1937-1938 Taxes		1,828.10	
Bond Premium 1938 Airport Bonds		714.35	
Adjustment of Reserve for Bad Accounts		589.77	
		$203,189.10	
Less: Loss for the year ended June 30, 1938		*38,358.42*	
Net additions to Surplus			164,830.68
Balance—June 30, 1938			$1,568,746.84

Italic figures denote loss and deficiency.



MUNICIPAL RAILWAY OF SAN FRANCISCO

ORGANIZATION CHART

MUNICIPAL RAILWAY OF SAN FRANCISCO

FRED BOEKEN

Manager

FRED BOEKEN
Manager, Municipal Railway

General:

The Municipal Railway at the close of this fiscal year on June 30, 1938, was in its twenty-sixth year of operation. In the fiscal year just ended the Municipal Railway enjoyed an exceptional increase in business due mainly to two changes in the rate of fare charged by the larger of the two privately-owned street railway companies operating in San Francisco.

Effective July 6, 1937, the California State Railroad Commission granted this privately-owned company a 2-cent transfer charge in addition to the regular 5-cent cash fare. This rate of fare continued in effect up to and including May 28, 1938. During this period the cash passenger receipts of the Municipal Railway were $3,049,589, an increase of $235,761 over the same period in the previous fiscal year. This is an increase of 8.38 per cent and a daily average increase of $721. To accommodate the additional patronage in this period increased car hours operated over the same period in the last fiscal year amounted to 38,713 car hours.

Effective May 29, 1938, the rate of fare of this privately-owned company was again changed to a 7-cent cash fare or four rides for 25 cents with a free transfer privilege. This rate has continued in effect up to the present time. For the month and three days to June 30, 1938, that this rate of fare was in effect the cash passenger receipts of the Municipal Railway were $358,986, an increase of $72,836 over the same period in the previous fiscal year. This is an increase of 25.45 per cent and a daily average increase of $2,207. Additional car hours operated in this period over the same period last fiscal year amounted to 8,191 car hours.

The net profit for the fiscal year ended June 30, 1938, amounted to $267,739.

After providing for bond redemption there remained a cash surplus of $167,739. This surplus together with additional funds which may be accumulated in the future will be available to enable the Public Utilities Commission to extend feeder bus routes to districts of the city now badly in need of transportation. Indications are that future operations will continue to show improvement. The opening of the Golden Gate International Exposition on February 18, 1939, should have the effect of improving business conditions in San Francisco, and no doubt the Municipal Railway will enjoy increased business in the periods prior to and during this World's Fair.

MODERN BUSES
Latest equipment gives comfort and speed on Municipal Railway bus routes. Eureka-Diamond Street route was extended during year.

Operating revenue for the year was $3,472,880, an increase of $308,828 or 9.76 per cent over the preceding year.

Operating expenses (not including reserves or bond interest) amounted to $2,930,147, an increase of $216,234 or 7.97 per cent over the previous year. While wage scales remained the same as in the previous fiscal year, increased car hours operated, higher material costs, sick leave costs with pay for per diem men, and increased cost of power account for the increase in expense.

Net income for the fiscal year amounted to $267,739 as compared with a net income in the preceding year of $179,729. In considering this net income, it must be remembered that the Municipal Railway still maintains a wage schedule for per diem employees which is substantially higher than the average paid by private companies.

The number of employees as of June 30, 1938, was 1,226, an increase of 87 over the same day in 1937. The increase is due mainly to additional platform men being required to operate the increased schedules which were provided to handle the increased patronage.

Comparison of the budget estimate with actual results of operation for the fiscal year show an increase in estimated receipts of $87,671, and a decrease in expenditures of $20,518, a net saving on the budget estimate of $108,189.

The only indebtedness now against the Municipal Railway property is the Municipal Railway bond issue of 1913, originally issued for $3,500,000 of which $1,500,000 is still outstanding, this amount to be amortized at the rate of $100,000 per year for the next fifteen years.

The retention of the 5-cent fare with a free transfer privilege on the Municipal Railway lines has afforded the car riders of this system a large saving during the year. As the average fare on street railways in the United States is 8.33 cents, it is conservative to estimate this saving to the riders served by the Municipal Railway for the past year at $2,300,000.

The total mileage operated by the Municipal Railway cars and buses during the year was 9,212,687 miles and is an increase of 448,849 miles or 5.12 per cent over the previous year. Car and bus hours operated totaled 919,678 hours, an increase of 46,805 hours or 5.36 per cent as compared with the previous year. Total passengers carried was 90,290,519, an increase of 9,536,435 passengers or 11.81 per cent over the previous year.

Bus operations for the year resulted in a loss of $85,646 as compared with a loss of $79,544 for the preceding year. Mileage operated was 777,957 miles, an increase of 50,491 miles over the previous year. Total bus passengers carried totaled 4,514,270, an increase of 633,817 over last year.

Bus Route No. 4, the Embarcadero Route, operated at a profit of $3,685 for the fiscal year. This is the first year in the eleven and one-half years of operation that this bus route has shown a profit, the average yearly loss previous to this year being $6,688. The profit shown this year is due to the fact that the charge for depreciation this year is but $745 as compared with an average previous yearly charge of $5,246. The reason for the reduction of this charge is that buses and equipment in the capital setup of this route are fully depreciated and no new equipment has been set up in the accounts. In accordance with an agreement between the City and County of San Francisco and the State Board of Harbor Commissioners, the Municipal Railway is subsidized for the loss in any one year up to $18,000. As no loss is shown for this fiscal year there is no payment due.

NICKELS COUNT
Automatic machines sort, count and wrap approximately $10,000 collected daily by Municipal Railway conductors.

On October 15, 1937, the Seventeenth Street Division of the Municipal Railway was held up and the amount of $2,378 was taken. None of this sum was recovered as of June 30, 1938. Except for a few minor hold-ups of conductors, this is the only large amount ever lost by robbery in the twenty-five and a half years of operation of the Municipal Railway. Previously the Municipal Railway assumed its own risk in this regard, but it was deemed advisable commencing in November, 1937, to carry robbery insurance. A policy in effect since November, 1937, provides for $10,000 insurance, $5,000 for each division.

Rail operation on the Bay Bridge should be inaugurated some time in December, 1938. An appropriation of $140,000 from Municipal Railway

funds has been provided to build tracks for a loop connecting the Plan X Terminal with the street railway tracks on Market Street. This loop will be jointly used by the Municipal Railway and the Market Street Railway. An agreement has been entered into providing for an annual payment by the Market Street Railway to the Municipal Railway of 10 per cent of one-half of the cost of construction in addition to a proportion of the maintenance charges.

In accordance with the provisions of section 128 of the charter, an appropriation of $10,000 was provided to cover the cost of an appraisal of the Municipal Railway properties for depreciation purposes. As of June 30, 1938, this appraisal was still in progress, and no adjustments have been made in the accounts of the Municipal Railway as of this date.

Twenty-five and One-Half Years' Operation:

The Municipal Railway at the close of this fiscal year on June 30, 1938, had completed twenty-five and one-half years' operation. The total income from all sources from the start of operations on December 28, 1912, to June 30, 1938, amounted to $79,258,355, which amount includes $5,481,000 received from sale of bonds, $1,525,015 contributed, $663,630 interest received on bonds owned and daily cash balances, $70,230 received as subsidy from the Board of State Harbor Commissioners, and $305,148 miscellaneous profit and loss items. Passenger and other revenue totaled $71,213,062.

The total expenditures from start of operations, December 28, 1912, to June 30, 1938, were $63,505,905, of which operating expenses amounted to $57,529,947, bond interest charges $4,155,684, payments for injuries and damages, $1,698,123, and miscellaneous profit and loss charges $122,152. Bonds totaling $3,981,000 were retired out of a total of $5,481,000 issued.

Road and equipment purchased amounted to $10,966,384, of which $5,481,000 was derived from moneys received from bond sales, $4,424,028 from earnings and contributions, and $1,061,356 from the depreciation reserve fund.

Road and equipment retired totaled $942,730, leaving a balance of $10,023,654 on hand and in use.

At June 30, 1938, net cash, receivables and stores on hand, after deducting all liabilities, resulted in net free assets in the amount of $1,025,468.

In the twenty-five and one-half years of operation, the Municipal Railway carried 1,771,240,613 passengers; passenger car and bus miles operated totaled 204,033,426, and car and bus hours operated totaled 21,210,127.

Auditing and Accounting:

The accounts of the Municipal Railway are maintained in accordance with the forms and requirements of the State Railroad Commission insofar as these are applicable to publicly-owned and operated utilities and also in accordance with Section 64 of the charter of the City and County of San Francisco. The centralized control system installed by the controller has been merged with these accounts, with the result that no obligations may be incurred without the prior certification of the controller that funds are available to discharge said obligation when it becomes due.

ARMATURE REPAIRS
Excellent shops insure good maintenance of Municipal Railway equipment.

The cash balances of Municipal Railway funds were verified in the treasurer's office as of June 30, and with the exception of settlements for injuries and damages provision has been made for all ascertained liabilities outstanding on June 30, 1938.

The activities of the Municipal Railway are audited currently by the railway auditing staff.

Maintenance of Track and Roadway:

The usual high standard of maintenance in effect on the Municipal Railway properties has been maintained during the last fiscal year, with the result that over 2,000 lineal feet of single track was reconstructed, 35,100 square feet of concrete paving base placed, and 97,809 square feet of asphalt paving renewed. The thermit welding process of repairing broken rails was continued during the year, and a total of 404 welds were made.

During the year 1.86 miles of overhead trolley wire was replaced at a cost of $2,072.

New Construction:

No new construction work was done during the fiscal year with the exception of completing the line "L" extension to Fleishhacker Pool. This extension was about 90 per cent completed in the previous fiscal year. This extension is .89 of a mile of single track round trip distance. Construction was done by W. P. A. forces. The Municipal Railway's cost amounted to $22,147 which includes rail and poles from the Market Street Railway Company's Gough Street line at a salvage value. The amount expended by the W. P. A. amounted to $53,058 making a total cost of $75,205.

Reconstruction and Replacements:

Expenditures for reconstruction and replacements for all classes of Municipal Railway properties during the fiscal year totaled..... $93,274

Reconstruction of Market Street Tracks—Geary to Sansome Streets.

2,200 feet of single track and 10,000 square feet of asphalt paving on concrete base placed under contract No. 165.

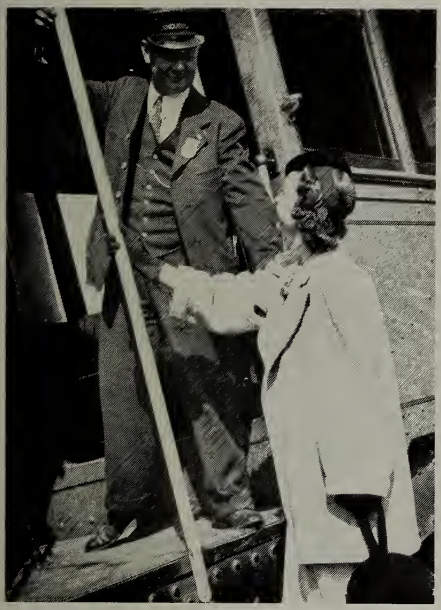
Amount expended fiscal year 1936-1937.....	$22,578
Amount expended fiscal year 1937-1938.....	22,557
Total cost.....	$45,135

Reconstruction—Miscellaneous Track and Roadway. The following are the principal track and roadway replacements made during the fiscal year:

Replacement Job No. 1273—Market Street—Embarcadero to Fremont Street, approximately 1,100 feet outbound track. Partial replacement. Total cost	$4,961
Replacement Job No. 1294—Part of track layout—Geary and Stockton Streets. Total cost	1,208
Replacement Job No. 1302—Crossing—Stockton and Post Streets. Crossing replaced by straight rail. Total cost	839
Replacement Job No. 1304 and No. 1309—Replacement of crossing at Market and McAllister streets. Total cost	3,857
Replacement Job No. 1307—Portion of crossing at Market and Fourth streets. Total cost. Market Street Railway Company to pay one-half of cost.	2,159
Replacement Job No. 1308—Replacement of rail curve, station 55, line "M." Total cost	1,067
Replacement Job No. 1312—Frog switch branchoff—Market Street at Stockton. Total cost	660
Replacement Job No. 1313—Crossing—Outbound—Market and Ninth streets. Total cost	2,989
Replacement Job No. 1317—Branchoff—Columbus Avenue at Union Street. Total cost	1,254
Replacement Job No. 1321—Rails—Twin Peaks Tunnel. Total cost, estimated. 50% completed at June 30, 1938.	2,091
Replacement Job No. 1324—¼ of Crossing at Geary and Powell Streets. Total cost	2,680
Miscellaneous Replacement Jobs—Paving. Total cost	2,554
Miscellaneous Replacement Jobs—Service Equipment, Furniture and Miscellaneous. Total cost	3,467
Miscellaneous Replacement Jobs—Overhead Wiring. Total cost	2,072
Replacement of Buses—Four buses which had been in service for the past 10 years and which had an accumulated mileage of 1,278,137 miles were replaced by four modern transit type coaches with a seating capacity of 32 passengers each. Total cost of four new buses	40,645

Transportation:

The usual high standard of service has been furnished by the transportation department, and every effort has been made to adjust service to meet changes in traffic conditions. During the year 85 changes were made in the time-tables of the various lines. The increase in car and bus hours operated over the previous fiscal year was 42,754 car hours and 4,051 bus hours. The line "L" extension to Fleishhacker Pool commenced operation on September 15, 1937, and resulted in a noticeable increase in travel on good weather days.



COURTESY AND SAFETY
Municipal Railway platform men are schooled to assist passengers.

The south terminal of Bus Route No. 6—Eureka-Diamond Route—was extended four blocks from Diamond and Clipper Streets to Diamond and Duncan Streets on May 8, 1938, an additional round-trip route mileage of .44 of a mile.

On January 1, 1938, Route No. 5—Marina Route — was extended one block and routed over Broderick Street instead of Divisadero Street, adding .18 of a mile to the round-trip mileage.

During the period from February 16, 1938, to and including May 28, 1938, Bus Route No. 1—Park Route—was rerouted via Eighteenth Avenue which added 3.44 miles of round trip route mileage. This rerouting was necessary due to the closing of a portion of Seventh Avenue during street reconstruction.

The total passengers carried by the Municipal Railway system during the year was 90,290,519, an increase of 9,536,435 over the previous year, 2,616,911 greater than any fiscal year in the history of the Municipal Railway.

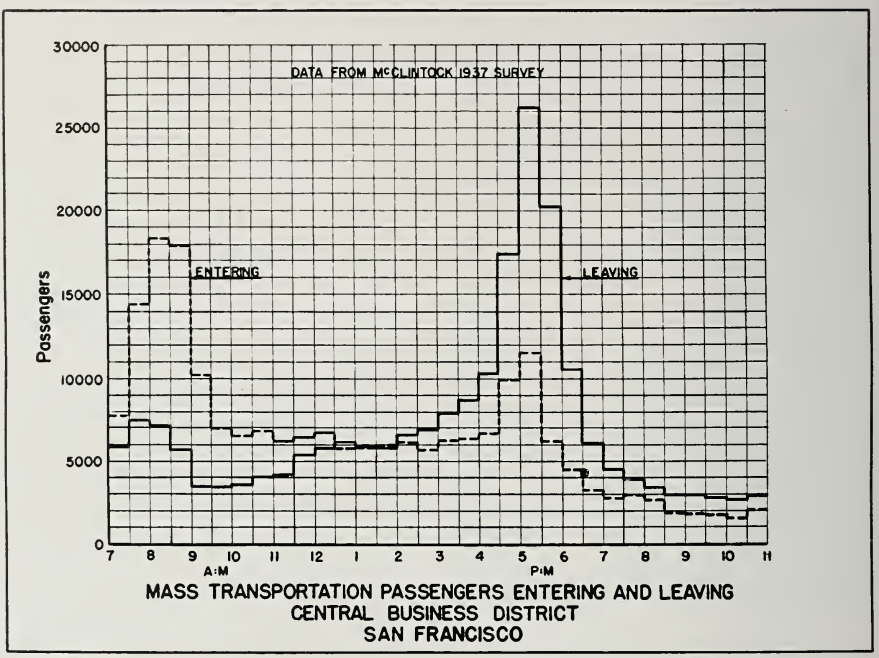
Maintenance of Equipment:

The equipment of the Municipal Railway has been maintained in first-class condition, 54 car bodies and four buses and seven trucks having been overhauled and painted, and 24 cars re-wheeled. Motors totaling 340 have been overhauled and repaired as were 54 units of electrical control apparatus.

During the fiscal year 40 propulsion motors and 20 air compressor armatures were rewound. The usual policy of cleaning cars daily and disinfecting weekly has been maintained throughout the year.

Bureau of Claims:

The increase in the number of passengers incident to the expansion of the Municipal Railway service during the 1937-1938 period was attended by a proportionate increase in the number of accidents especially during the latter part of the fiscal year. Early in May, 1938, the Market Street Railway Company's action in raising the car fare to a 7 cent cash fare or four rides for 25 cents resulted in a vigorous protest from the patrons of that company causing them to use the Municipal lines in numbers far greater than the normal capacity of the cars. This overcrowded condition of the Municipal Railway cars and buses caused an increase in the number of accidents. With adjustments of service, overcrowded conditions were gradually overcome and facilities operated nearer to normal.



MASS TRANSPORTATION PASSENGERS ENTERING AND LEAVING CENTRAL BUSINESS DISTRICT SAN FRANCISCO

The accidents have been classified as in previous annual reports as follows:

Those in which the Municipal Railway was directly involved and those occurring on or near the right-of-ways, but in which the Municipal Railway cars were not directly involved.

The following statement shows the accidents filed during the year so classified.

CLASSIFICATION OF ACCIDENTS

Municipal Railway Involved	Number of Accidents
1. Automobile collisions	1,940
2. Injuries to passengers	1,159
3. Injuries to automobile occupants	(40)
4. Injuries to pedestrians	217
5. Damage to wearing apparel	99
6. Street car collisions	47
7. Broken windows	188
8. Deaths	4
9. Employees injured	126
10. Miscellaneous	237
Near Track	
Municipal Railway Not Involved	
11. Automobile collisions	13
12. Pedestrians struck by automobiles	44
Total	4,074

The Bureau of Claims has continued its policy of endeavoring to have an investigator visit every person who has met with an injury by reason of the operation of the Municipal Railway cars or buses, regardless of the liability for that injury. It has sought to impress those visiting or communicating with the Bureau of Claims that the Municipal Railway has a scrupulous concern for the welfare of the citizens of San Francisco as regards their safety as passengers on the Municipal Railway street cars and buses, or on the streets traversed by its lines. At the same time, however, the Bureau of Claims is watchful of the property and resources of this important utility against fraudulent claims for alleged injuries or damages.

The Bureau of Claims, under the direction of the Manager of Utilities, has continued its cooperation with other bureaus and departments in the investigation and settlement of claims made against all the utilities under the jurisdiction of the Public Utilities Commission.

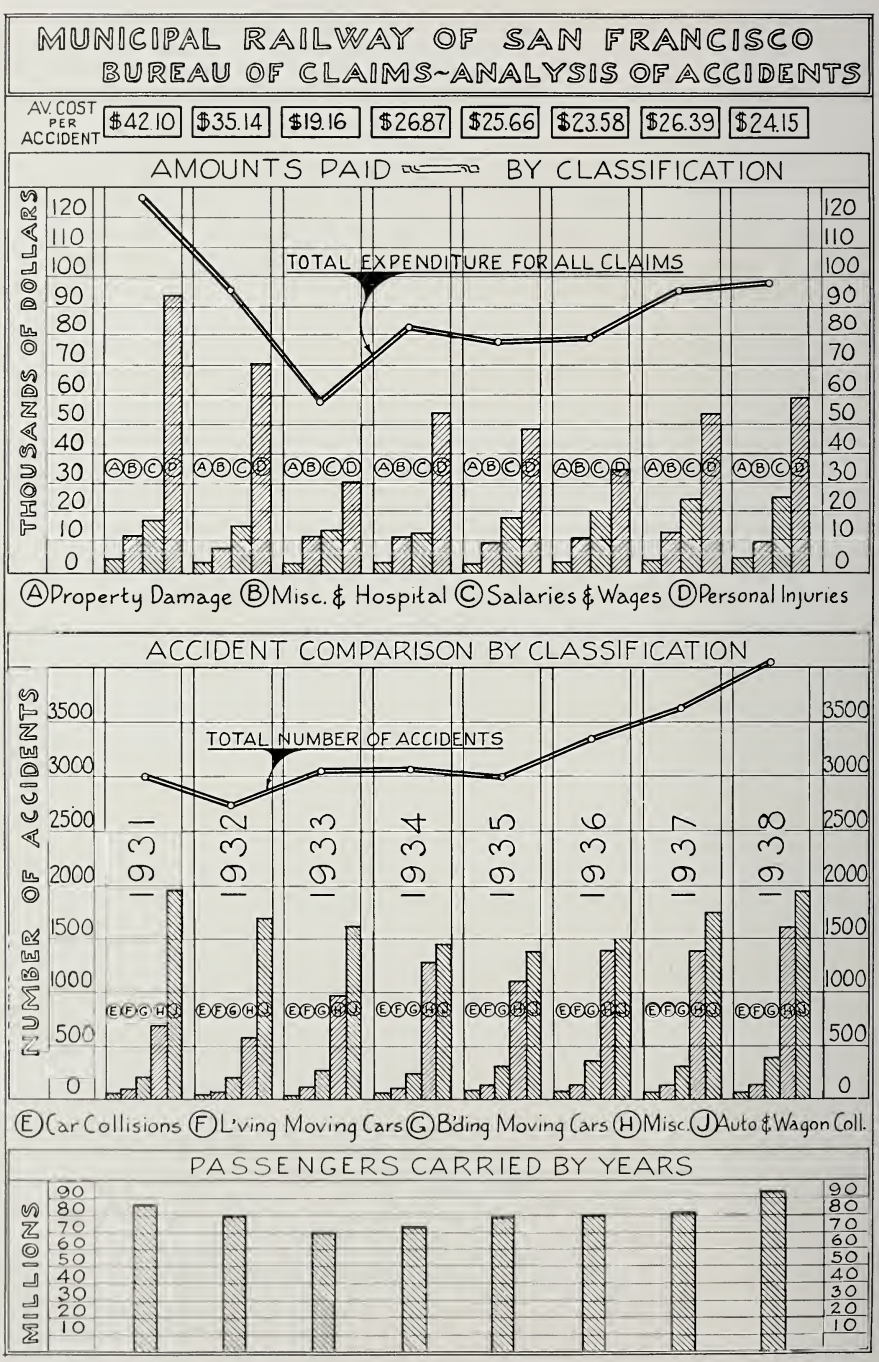
COMPARATIVE STATEMENT OF ACCIDENT REPORTS FISCAL YEARS ENDED JUNE 30, 1938, AND JUNE 30, 1937

Classification	Geary Division		17th Street Division	
	Fiscal Year Ended June			
	1938	1937	1938	1937
Street car collisions	16	15	32	30
Auto and wagon collisions	968	864	972	917
Boarding moving cars	149	137	216	168
Leaving moving cars	74	62	48	48
Miscellaneous	776	652	823	719
Total	1,983	1,730	2,091	1,882

Court Statistics:

During the fiscal year ended June 30, 1938, cases tried in the several courts showed a very satisfactory result in the proportion of verdicts in favor of the Municipal Railway:

	No. of Cases	Amount Sued for	Verdict For Claimant	Percentage Paid on Amount of Claim
Superior Court	16	$324,352.92	$21,795.75	6.72%
Municipal Court	16	26,161.67	4,299.95	16.44%
Small Claims Court	3	105.80	.....	....
Total	35	$350,620.39	$26,095.70	7.44%


MUNICIPAL RAILWAY OF SAN FRANCISCO
BUREAU OF CLAIMS~ANALYSIS OF ACCIDENTS
AV. COST PER ACCIDENT
$42.10
$35.14
$19.16
$26.87
$25.66
$23.58
$26.39
$24.15
AMOUNTS PAID BY CLASSIFICATION
THOUSANDS OF DOLLARS
TOTAL EXPENDITURE FOR ALL CLAIMS
Ⓐ Property Damage Ⓑ Misc. & Hospital Ⓒ Salaries & Wages Ⓓ Personal Injuries
ACCIDENT COMPARISON BY CLASSIFICATION
NUMBER OF ACCIDENTS
TOTAL NUMBER OF ACCIDENTS
1931
1932
1933
1934
1935
1936
1937
1938
Ⓔ Car Collisions Ⓕ L'ving Moving Cars Ⓖ B'ding Moving Cars Ⓗ Misc. Ⓙ Auto & Wagon Coll.
PASSENGERS CARRIED BY YEARS
MILLIONS

COMMENTS ON FINANCIAL STATEMENTS

GENERAL BALANCE SHEET

EXHIBIT "A"

For the purpose of more clearly portraying the assets and liabilities of the Municipal Railway, the balance sheet in this year's report is shown in narrative form instead of the conventional form:

PROPERTIES—LESS DEPRECIATION $4,697,902.66

Composition of this amount is as follows:

Road and Equipment	$10,004,778.57	
Analysis of this amount is given in schedule I which reflects the additions and retirements for the fiscal year. In accordance with the budget provision the sum of $100,000 has been reserved for depreciation during the current year.		
New Construction in Progress	7,425.69	
This item represents costs of surveys in connection with subways and rapid transit system, costs of which are incomplete as of June 30, 1938.		
	$10,012,204.26	
Deduct:		
Reserve for Accrued Depreciation	5,314,301.60	
This is the amount charged to operations and credited to depreciation reserve for depreciation of properties from December 28, 1912, to June 30, 1938, less charges for retirements.		
Net value of properties as above	$4,697,902.66	

CASH WITH THE TREASURER $1,009,269.26

The funds comprising this amount are as follows:

Municipal Railway Bond Redemption Fund	500.00
Municipal Railway Bond Interest Fund	13,402.50
The above two funds are maintained by transfer to meet principal maturities and bond interest as they become due.	
Municipal Railway Operating Fund	662,934.13
This fund maintained for payment of normal expenses of operation and also contains unallocated reserves of the railway.	
Accident Reserve Fund	6,881.50
An analysis of the accident reserve fund is shown in the statement of reserve funds exhibit "C." The amount reserved for accidents during the current year was 3 per cent of the gross operating revenue. This amount has proved ample to meet all expenses incurred in connection with the settlement of accident claims.	

Depreciation Reserve Fund	321,551.13	
For analysis of this fund see exhibit "C." The balances in all the above funds have been reconciled with the records of the treasurer of the City and County of San Francisco by the auditing staff of the Municipal Railway.		
Manager's Contingent Fund	4,000.00	
This fund is maintained for payment of small accident claims and expenses in connection with special investigations. It is in the custody of the following officers:		
Mr. Fred Boeken, Manager $700.00		
Mr. Thos. B. Johnson, Claims Adjuster 3,300.00		
$4,000.00		
These funds have been reconciled with certifications obtained from the depositary and found to be in balance.		
Total Cash on Hand	$1,009,269.26	
MISCELLANEOUS ACCOUNTS RECEIVABLE		$670.10
Due from Pacific Gas & Electric Company:		
Pole Rental	$614.00	
Due from Nichols & Fay:		
Return of Insurance Premium	56.10	
	$670.10	
INTERFUND ACCOUNTS RECEIVABLE		1,243.82
Due from San Francisco Water Department:		
Miscellaneous	$200.10	
Due from General Fund City & County of San Francisco:		
Miscellaneous	96.24	
Interest Receivable:		
From General Fund Interest on Loan	235.80	
From DeYoung Museum Interest on Loan	104.00	
From General Fund accrued interest due to the Municipal Railway for the period April, May and June, 1938, on the daily bank balances placed on deposit by the city treasurer. In accordance with Ordinance 9870 (N. S.) Municipal Railway funds are deposited with the treasurer who in turn places same on deposit with the various banks. Interest in this amount has accrued on these deposits and is shown as due from the General Fund	607.68	
Total	$1,243.82	
INTRAFUND ACCOUNTS RECEIVABLE		$11,807.25
Amounts as follows are due between funds of the Municipal Railway:		
Due to Depreciation Reserve Fund from Operating Fund for Stores	$7,979.29	
Due to Operating Fund from Depreciation Reserve Fund for Labor and Materials Used on Depreciation Reserve Fund Replacement Jobs	3,827.96	
	$11,807.25	

DEFERRED CHARGES		$256,349.46
Materials and Supplies at Carhouse Storage Yard... A physical inventory was taken of the materials at the storage yard by a member of the auditing staff of the Municipal Railway and a member of the engineering department, and material to the amount of $838 was charged off to expense to bring the physical count into agreement with the general ledger account. A perpetual inventory is maintained of the materials in the carhouse storeroom which results in material counts being made at frequent intervals and adjustments as necessary being made throughout the year. Materials on hand as of June 30, 1938, were found to be in accord with the records and all prices, extensions and footings of the inventory have been checked.	$183,892.15	
Materials and Supplies Contributed..... This represents the balance of stores on hand which were received by reason of the abandonment of the Gough Street line by the Market Street Railway Company.	806.74	
Replacement Jobs in Progress.....	11,450.12	
Cash Advanced to Public Utilities Improvement Fund This amount represents the balance of $135,120 advanced from Municipal Railway Funds to finance cost of replacement and reconstruction jobs.	1,968.58	
Cash Advanced to W.P.A. City Project Control..... This amount was advanced from Municipal Railway Funds for test borings in connection with Rapid Transit Survey.	1,625.00	
Cash Advanced to Public Utilities Commission..... This amount was advanced to provide for payment of accounting services in connection with survey of Municipal Railway properties for depreciation purposes.	2,000.00	
Depreciation Survey ..... Amount expended by the Municipal Railway for clerical services in connection with the above mentioned survey for depreciation purposes.	407.50	
Contract, P. O., S. O., and W. O. Liability (Contra).. This item represents an unadjusted debit for purchase order, service order, work order, and contract liability on which no materials have been delivered nor services performed but contracted for and is offset under accounts payable by a similar amount.	$54,199.37	
		$256,349.46

BONDED DEBT		$1,500,500.00
Funded Debt Unmatured	$1,500,000.00	

The following is a recapitulation of the unmatured funded debt:

Municipal Railway 5%—1913

Total issue	$3,500,000.00
Matured 1937-1938	100,000.00
Unmatured June 30, 1938	1,500,000.00
Date of final maturity	Dec. 1, 1952

Matured Funded Debt Unpaid	500.00	

Bonds in the amount of $500.00 had matured prior to June 30, 1938, but had not been presented for redemption on that date.

	$1,500,500.00	
BOND INTEREST PAYABLE		$13,402.50

Interest coupons matured but unpaid on June 30, 1938.

BOND INTEREST PAYABLE—ACCRUED		$6,250.00

Interest accrued to June 30, 1938, but not due until December 1, 1938.

ACCOUNTS PAYABLE		$190,695.48

This amount consists of the following:

Unpaid Warrants Operating Fund	$110,323.99
Invoices Operating Fund Not Vouched by Controller	23,815.97
Payrolls not approved to date by Controller	2,356.15
Purchase Order, S. O., and O. W. Liability (Contra)	54,199.37
Items contracted for but for which no materials have been delivered nor services rendered.	
	$190,695.48

INTERFUND ACCOUNTS PAYABLE		$19,017.36

This item represents accounts payable to other city departments as of June 30, 1938. See exhibit "F."

INTRAFUND ACCOUNTS PAYABLE (CONTRA)		$11,807.25

Amount due between funds of the Municipal Railway. See exhibit "E."

ACCIDENT AND OTHER RESERVES		$97,282.94
Accident Reserve		

The following is an analysis of this account for the current fiscal year:

Balance June 30, 1937	$19,518.26
Add: Adjustment recorded on Controller's books applicable to prior years	71,203.12
Addition to reserve during year 3% of gross revenue	104,186.40
Total	$194,907.78
Less claims paid, legal and other expenses	98,373.99
Balance—June 30, 1938	$96,533.79

Represented as follows:		
Accident Reserve Fund Cash	$6,881.50	
Due from Municipal Railway Operating Fund	89,652.29	
	$96,533.79	
Reserve for Overhead	611.45	
This is the reserve accumulated on bills rendered to city departments and others to cover vacation, sick leave and compensation insurance costs.		
Miscellaneous Deposits	137.70	
This amount was deposited with the Municipal Railway to cover cost of Pole Moving Job No. 200.		
	$97,282.94	
SURPLUS JUNE 30, 1938		$4,138,287.02
Surplus as shown in Exhibit "A" is composed of the following items:		
Contributed Surplus	$1,524,941.73	
From Operations at Beginning of present fiscal year	2,446,331.66	
	$3,971,273.39	
Less Surplus adjustments during the year applicable to prior years	100,799.00	
	$3,870,474.39	
From Operations during fiscal year	267,739.29	
Contributed during fiscal year	73.34	
Total Surplus	$4,138,287.02	
COMPARISON CHARGES—TAXES AND OTHER ITEMS		$3,853,207.91
See Income Statement Exhibit "B."		
The Municipal Railway being a municipally owned utility is not required to pay any taxes either to the City and County of San Francisco or to the State of California. For comparative purposes, taxes and other items have been recorded as follows:		
Taxes		
State of California	$3,102,272.29	
City and County of San Francisco Franchise	456,831.78	
City and County of San Francisco Car License	35,988.75	
City and County of San Francisco Local	240,786.74	
Federal Income Tax	13,270.61	
	$3,849,150.17	
Services Furnished		
Water furnished without charge by San Francisco Water Department	4,057.74	
Total	$3,853,207.91	

EXHIBIT "A"

BALANCE SHEET — JUNE 30, 1938

ASSETS

PROPERTIES	
(This is what it cost to build the Municipal Railway; of the total $10,004,778.57 has been spent for completed work and $7,425.69 on work not yet completed.)	$10,012,204.26
The property has been reduced in value by the wearing out of equipment and tracks to the estimated amount of	5,314,301.60
	$4,697,902.66
CASH	
(We have cash deposited with the Treasurer of the City and County of San Francisco totaling $1,009,269.26; of this $662,934.13 is to pay wages and salaries and for purchasing materials and supplies to operate the Railway: $500.00 is reserved to pay back borrowed money now due but which the Bond owners have not yet presented for payment: $13,402.50 is kept to pay interest on borrowed money which is due but which has not been presented to us by the Bond owners for payment: $6,881.50 is kept to pay possible claims for accidents and for which claims have been filed: $325,551.13 is held to replace equipment, tracks, paving, and other properties of the Railway as they wear out: $4,000.00 is available to the manager of the Railway to pay small items arising from time to time in the operation of the Railway. The sums are replaced in this revolving fund by the Treasurer upon the approval of the Public Utilities Commission and the Controller.)	1,009,269.26
MISCELLANEOUS ACCOUNTS RECEIVABLE	
(This is owed the Railway by other persons for work it has done for them and which has not yet been collected.)	670.10
INTERFUND ACCOUNTS RECEIVABLE	
(This is owed to the Railway by other City Departments for work the Railway has done but for which the Railway has not yet been paid.)	1,243.82
INTRAFUND ACCOUNTS	
(This has been expended for work on the Railway but has not yet been collected from the Railway fund responsible.)	11,807.25
DEFERRED CHARGES	
(This is the amount expended for materials and supplies on hand but not yet used and also for cash or credit advanced for work now in progress for the betterment of the Railway.)	256,349.46
Properties and cash required to operate the Railway	$5,977,242.55

LIABILITIES

BONDED DEBT	
(What the Municipal Railway has borrowed in Bonds not yet due but which are being repaid at the rate of $100,000.00 per year.) ($500.00 due but not presented for payment)	$1,500,500.00
BOND INTEREST PAYABLE	
Matured Coupons Unpaid	
(This is the money due Bond Holders for interest who have not yet presented their Bond Coupons for payment.)	13,402.50
Accrued—Not Due	
(The monthly amount of interest on borrowed money not due until December 1, 1938, which is recorded on the books each month.)	6,250.00
ACCOUNTS PAYABLE	
(This is the money the Railway owes for wages, materials, etc., purchased but not yet paid for.)	190,695.48
INTERFUND ACCOUNTS—SCHEDULE ANNEXED	
(This is due other Departments by the Railway for services performed but not yet paid for.)	19,017.36
INTRAFUND ACCOUNTS (CONTRA)	
(This is due from one fund of the Railway to another for work performed and is balanced by the same sum in Assets.)	11,807.25
ACCIDENT AND OTHER RESERVES	
(This is a reserve to meet obligations now existing on account of claims for injuries and damages.)	97,282.94
SURPLUS JUNE 30, 1938	
(This is the ownership of the people of San Francisco in the Municipal Railway. It should be understood that most of this is invested in the system and is not in cash.)	$4,138,287.02
TOTAL	$5,977,242.55

EXHIBIT "B"

COMPARATIVE INCOME STATEMENT FOR JUNE, 1938, AND TWELVE MONTHS OF FISCAL YEAR 1937-1938

	Month of June				Twelve Months to June 30				Cumulative from December 28, 1912, to June 30, 1938	
REVENUE	1938	%	1937	%	1938	%	1937	%		%
Passenger Revenue	$335,105.55	100.00	$260,727.05	100.00	$3,444,744.88	100.00	$3,137,583.88	100.00	$70,802,070.32	100.00
Advertising Revenue	1,843.80		1,833.37		22,125.71		22,000.00		370,270.23	
Miscellaneous	492.96		998.37		6,009.39		4,468.19		40,721.09	
Total Revenue	$337,442.31		$263,558.79		$3,472,879.98		$3,164,052.07		$71,213,061.64	
OPERATING EXPENSES										
1. Way and Structures	$14,872.19	4.44	$11,987.84	4.60	$155,275.94	4.51	$144,561.22	4.61	$2,846,537.79	4.02
II. Equipment	18,967.21	5.66	15,755.74	6.04	207,932.16	6.04	192,726.50	6.14	4,357,495.19	6.15
III. Power	45,762.76	13.66	40,431.37	15.51	516,072.40	14.98	484,763.47	15.45	10,357,071.66	14.63
IV. Conducting Transportation	162,147.67	48.38	143,399.19	55.00	1,801,375.13	52.29	1,698,938.08	54.15	36,124,808.02	51.02
VI. General and Miscellaneous	*20,641.14	6.16	17,652.39	6.77	249,491.06	7.24	192,923.90	6.15	3,844,034.23	5.43
Total Operating Expense	$262,390.97	78.30	$229,226.53	87.92	$2,930,146.69	85.06	$2,713,913.17	86.50	$57,529,946.89	81.25
PROFIT FROM OPERATIONS	$75,051.34		$34,332.26		$542,733.29		$450,138.90		$13,683,114.75	
DEDUCT PROVISION FOR										
Accidents	$10,123.27	3.02	$7,906.76	3.03	$104,186.40	3.02	$94,921.56	3.03	$1,794,656.33	2.53
Depreciation	8,333.34	2.49	8,333.34	3.20	100,000.00	2.91	100,000.00	3.18	6,036,628.50	8.53
Total Deductions	$18,456.61	5.51	$16,240.10	6.23	$204,186.40	5.93	$194,921.56	6.21	$7,831,284.83	11.06
INCOME FROM OPERATIONS	$56,594.73		$18,092.16		$338,546.89		$255,217.34		$5,851,829.92	
NON-OPERATING INCOME										
Income from Securities Owned									597,037.91	
Interest on Bank Balances	947.48		1,197.33		2,667.87		4,204.08		66,591.90	
Subsidy from Harbor Commission			200.51				3,631.70		70,229.71	
Other Income (P. & L.)					6,261.28				305,418.32	
Total Non-Operating Income	$947.48		$1,397.84		$8,929.15		$7,835.78		$1,039,277.84	
GROSS INCOME	$57,542.21		$19,490.00		$347,476.04		$263,053.12		$6,891,107.76	
DEDUCTIONS FROM GROSS INCOME										
Interest on Funded Debt	$6,250.00	1.87	$6,666.67	2.56	$77,083.33	2.24	$82,083.34	2.62	$4,155,684.24	5.87
Miscellaneous Debits (P. & L.)	87.39	.02	1,093.56	.42	2,653.42	.07	1,240.59	.04	122,151.57	.17
Total Deductions from Gross Income	$6,337.39	1.89	$7,760.23	2.98	$79,736.75	2.31	$83,323.93	2.66	$4,277,835.81	6.04
NET INCOME	$51,204.82	15.28	$11,729.77	4.50	$267,739.29	7.77	$179,729.19	5.73	$2,613,271.95	3.69

*SICK LEAVE COSTS INCLUDED

Month of June, 1938	$3,364.67
Twelve Months Ended June, 30, 1938	40,106.22

COMPARISON CHARGES

Month of June, 1938	$10,703.20
Twelve Months Ended June 30, 1938	110.043.34
December 28, 1912, to June 30, 1938	3,853,207.91

This is what the railway would pay in taxes if privately-owned, but not paid because it is owned by the people.

EXHIBIT "C"

RESERVE FUNDS OF THE MUNICIPAL RAILWAY AS OF JUNE 30, 1938

ACCIDENT RESERVE FUND

Total paid in and/or credited to Fund May 1, 1926 to June 30, 1937		$1,118,506.18	
Expended for Injuries and Damages May 1, 1926 to June 30, 1937		1,027,784.80	
Unencumbered Balance June 30, 1937			$90,721.38
Due from Mun. Ry. (Op.) Fund July 1, 1937 to June 30, 1938		$104,186.40	
Less Charges for Injuries and Damages Paid out of Oper. Fund July 1, 1937 to June 30, 1938		98,373.99	5,812.41
Unencumbered Balance at June 30, 1938			$96,533.79
The Unencumbered Balance consists of:			
Cash		6,881.50	
Due from Operative Fund		89,652.29	
TOTAL			$96,533.79

DEPRECIATION RESERVE FUND

Total paid into and/or owing to Fund May 1, 1926 to June 30, 1937		$2,473,549.23	
Expended for Replacements May 1, 1926 to June 30, 1937		951,442.89	
Unencumbered Balance June 30, 1937			$1,522,106.34
Bal. due from Mun. Ry. Oper. Fd. July 1, 1937 to June 30, 1938			
Add Cash Transfers from Oper. Fd. July 1, 1937 to June 30, 1938		$100,000.00	
Total Paid into and/or owing to Fund July 1, 1937 to June 30, 1938		$100,000.00	
Less: Charges for Replacements Paid out of Oper. Fund July 1, 1937 to June 30. 1938	$3,827.96		
Charges for Replacements Paid out of Deprec. Res. Fund July 1, 1937 to June 30, 1938	106,085.06	109,913.02	
Net Increase in Fund July 1, 1937 to June 30, 1938			*9,913.02*
			$1,512,193.32
Less Balances due from Operating Fund Applicable to Fiscal Years 1927-1928 to 1932-1933			1,186,694.86
Unencumbered Balance—June 30, 1938			325,498.46
The Unencumbered Balance consists of:			
Cash		$321,551.13	
Available Resources—Materials and Supplies		7,979.29	
Due from Operative Fund—Account No. 1110			
Due to Operating Fund—Replacement Job Expenditures Applicable to Fiscal Year 1937-38		*3,827.96*	
Due to Bureau of Street Repair D. P. W. for Paving Replacements		*404.10*	
Accounts Payable—General Creditors			
Due from San Francisco Water Department		200.10	
			$325,498.46

Italic figures denote loss and deficiency.

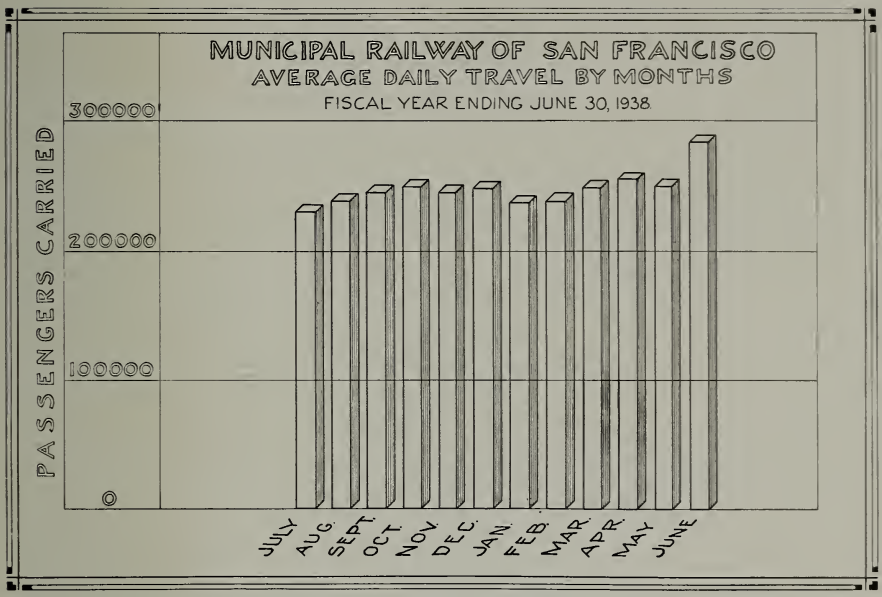


EXHIBIT "D"

COMPARISON OF BUDGET WITH ACTUAL RECEIPTS AND EXPENDITURES FISCAL YEAR ENDED JUNE 30, 1938

	Budget	Actual	Increase or Decrease
RECEIPTS			
Operating Revenue and Other Income	$3,385,209	$3,472,880	$87,671
From Surplus	22,080	22,080	....
Total Receipts	$3,407,289	$3,494,960	$87,671
EXPENDITURES			
Way and Structures	$171,119	$171,006	*$113*
Equipment	208,062	207,907	*155*
Power	522,500	516,472	*6,028*
Conducting Transportation	1,805,226	1,803,985	*1,241*
General and Miscellaneous	239,552	225,016	*14,536*
Depreciation Reserve	100,000	100,000	....
Claims Department	99,420	98,373	*1,047*
Employees Compensation	23,000	22,990	*10*
Bond Interest	77,500	77,500	....
Bond Redemption	100,000	100,000	....
Appraisal of Properties	407	407	....
New Equipment	5,000	7,612	2,612
Total Expenditures	$3,351,786	$3,331,268	*$20,518*
NET SAVINGS ON BUDGET ESTIMATE	$55,503	$163,692	$108,189

Italic figures denote loss and deficiency.

EXHIBIT "E"

INTRAFUND ACCOUNTS
JUNE 30, 1938

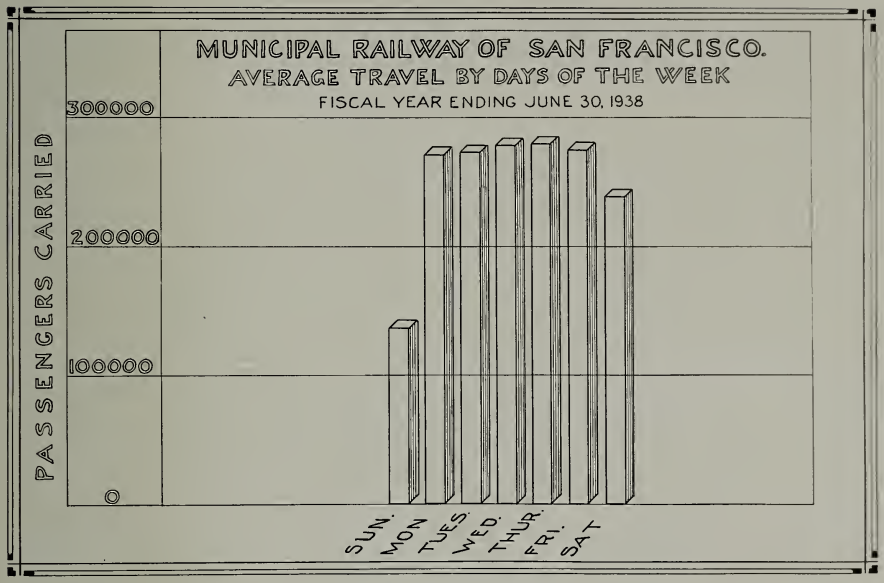
Due Depreciation Reserve Fund from Operating Fund for balance of stores transferred to Operating Fund when Stores Revolving Fund was established and for subsequent transfers	$7,979.29
Due Operating Fund from Depreciation Reserve Fund for Labor and Material used on replacement jobs during Fiscal Year 1937-38	3,827.96
Total per Balance Sheet	$11,807.25

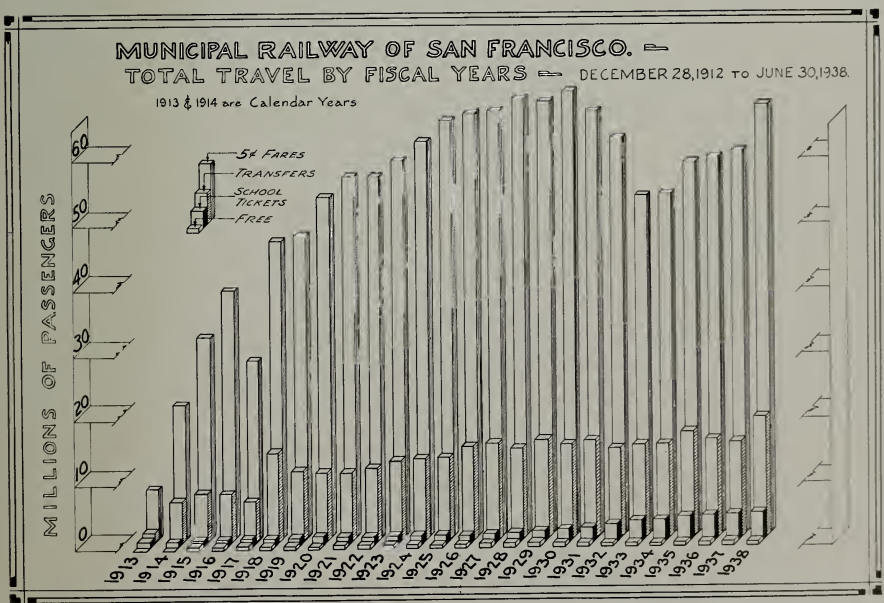
EXHIBIT "F"

INTERFUND ACCOUNTS PAYABLE
JUNE 30, 1938

P. S. ENTERPRISES

SAN FRANCISCO WATER DEPARTMENT				
Automobile Insurance—White Passenger Bus—March 2, 1938 to August 31, 1938				$130.90
GENERAL CITY AND COUNTY				
GENERAL FUND				
DEPARTMENT OF PUBLIC WORKS				
Bureau of Engineering, Blueprints and Photostats—April to June, 1938		$27.88		
CONTROLLER				
General Fund due Controller		504.10		
PURCHASING DEPARTMENT				
General Fund due Purchasing Dept.—Scavenger Service for June, 1938		33.02		
Total Due General Fund			$565.00	
COUNTY ROADS FUND				
DEPARTMENT OF PUBLIC WORKS				
Bureau of Street Repair—June Paving Replacements—Depreciation Reserve Fund		$404.10		
Bureau of Street Repair—June Paving Maintenance		242.06		
Total Due County Roads Fund			646.16	
PUBLIC UTILITIES COMMISSION				
Bureau of Engineering—Engineering Services and Miscellaneous Services—June—Actual			591.47	
EMPLOYEES' RETIREMENT SYSTEM				
Pension Matching Costs for May—Actual	$6,614.51			
Pension Matching Costs for June—Actual	7,038.13	$13,652.64		
Prior Service Costs for June—Actual	$1,708.56	1,708.56		
Medical and Compensation for June		1,439.28		
Hospital Services to Employees for May—Actual	215.14			
Hospital Services to Employees for June—Actual	68.21	283.35		
Total Due Retirement System			17,083.83	18,886.46
TOTAL AS PER BALANCE SHEET				$19,017.36


MUNICIPAL RAILWAY OF SAN FRANCISCO.
AVERAGE TRAVEL BY DAYS OF THE WEEK
FISCAL YEAR ENDING JUNE 30, 1938
PASSENGERS CARRIED
300000
200000
100000
0
SUN.
MON.
TUES.
WED.
THUR.
FRI.
SAT.


MUNICIPAL RAILWAY OF SAN FRANCISCO.
TOTAL TRAVEL BY FISCAL YEARS — DECEMBER 28, 1912 TO JUNE 30, 1938.
1913 & 1914 are Calendar Years
MILLIONS OF PASSENGERS
60
50
40
30
20
10
0
5¢ FARES
TRANSFERS
SCHOOL TICKETS
FREE
1913 1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937 1938

SCHEDULE I

SCHEDULE OF ROAD AND EQUIPMENT AS OF JUNE 30, 1938

Acct. No.		Balance June 30, 1937	Additions Fiscal Year 1937-1938			Retirements During Fiscal Year 1937-1938	Net Additions Fiscal Year 1937-1938	Balance June 30, 1938
			Depreciation Reserve Fund	Municipal Railway Fund	Total			
	WAYS AND STRUCTURES							
501	Engineering and Superintendence	$404,971.79	$5,058.16	$3,275.80	$8,333.96	$3,671.05	$4,662.91	$409,634.70
502	Right of Way	169,839.07	.....	.....	.....	.....	.....	169,839.07
503	Other Land Used in Electric Railway Operation	265,490.48	.....	.....	.....	.....	.....	265,490.48
504	Grading	449,596.35	.....	.....	.....	.....	.....	449,596.35
505	Ballast	320,979.50	1,159.98	.....	1,159.98	917.00	242.98	321,222.48
506	Ties	170,452.86	1,096.54	43.77	1,140.31	890.51	249.80	170,702.66
507	Rails, Rail Fastenings and Joints	846,841.44	8,515.99	5,536.57	14,052.56	6,034.09	8,018.47	854,859.91
508	Special Work	297,833.54	10,615.47	1,789.00	12,404.47	9,594.67	2,809.80	300,643.34
510	Track and Roadway Labor	707,853.01	19,920.53	860.29	20,780.82	7,085.93	13,694.89	721,547.90
511	Paving	1,085,831.16	11,153.33	3,111.66	14,264.99	11,120.01	3,144.98	1,088,976.14
512	Roadway Machinery and Tools	17,827.13	.....	4,068.74	4,068.74	.....	4,068.74	21,895.87
513	Tunnels and Subways	13,600.00	.....	.....	.....	.....	.....	13,600.00
515	Bridges, Trestles, and Culverts	4,231.42	23.52	.....	23.52	.....	23.52	4,254.94
516	Crossings, Fences, and Signs	41,810.19	.....	.....	.....	.....	.....	41,810.19
517	Signals and Interlocking Apparatus	2,437.58	.....	.....	.....	.....	.....	2,437.58
518	Telephone and Telegraph Lines	162.49	.....	.....	.....	.....	.....	162.49
519	Poles and Fixtures	248,207.63	14,246.00	3,158.49	17,404.49	.....	17,404.49	265,612.12
520	Underground Conduits	142,495.30	.....	.....	.....	.....	.....	142,495.30
521	Distribution System	730,768.63	1,915.46	2,907.00	4,822.46	1,708.93	3,113.53	733,882.16
523	Shops and Carhouses	886,686.34	173.27	336.65	509.92	237.00	272.92	886,959.26
524	Stations, Miscellaneous Buildings and Structures	35,482.67	174.61	354.10	528.71	108.00	420.71	35,903.38
527	Cost of Road Purchased	44,154.47	.....	.....	.....	.....	.....	44,154.47
529	Other Expenditures, Ways and Structures	84,348.16	7,468.69	7,090.55	14,559.24	1,010.16	13,549.08	97,897.24
	Total Ways and Structures	$6,971,901.21	$81,521.55	$32,532.62	$114,054.17	$42,377.35	$71,676.82	$7,043,578.03
	EQUIPMENT							
530-A	Passenger and Combination Cars—Electric	$1,536,459.32	$602.55	$1,426.55	$2,029.10	$540.00	$1,489.10	$1,537,948.42
530-B	Passenger and Automotive Cars—Automotive	181,686.15	40,645.28	.....	40,645.28	32,644.73	8,000.55	189,686.70
532-A	Service Equipment—Electric	13,871.11	.....	.....	.....	.....	.....	13,871.11
532-B	Service Equipment—Automotive	29,930.01	2,079.95	1,356.51	3,436.46	2,297.86	1,138.60	31,068.61
533	Electric Equipment of Cars	764,028.91	.....	.....	.....	.....	.....	764,028.91
536	Shop Equipment	42,698.75	.....	523.22	523.22	.....	523.22	43,221.97
537	Furniture and Office Equipment	31,668.35	1,369.51	1,286.17	2,655.68	573.97	2,081.71	33,750.06
	Total Equipment	$2,600,342.60	$44,697.29	$4,592.45	$49,289.74	$36,056.56	$13,233.18	$2,613,575.78
	GENERAL AND MISCELLANEOUS							
546	Law Expenditures	$26,668.31	.....	.....	.....	.....	.....	$26,668.31
547	Interest During Construction	252,270.75	.....	.....	.....	.....	.....	252,270.75
550	Miscellaneous	68,685.70	.....	.....	.....	.....	.....	68,685.70
	Total General and Miscellaneous	$347,624.76	.....	.....	.....	.....	.....	$347,624.76
	Total—Road and Equipment	$9,919,868.57	$126,218.84	$37,125.07	$163,343.91	$78,433.91	$84,910.00	$10,004,778.57

SCHEDULE II

ANALYSIS RESERVE FOR DEPRECIATION AS AT JUNE 30, 1938

Fiscal Year Ended	Provision for Depreciation			Cost of Track Roadway and Distributing System	Resulting Rate of Depreciation on Track Roadway and Distributing System
	Total	Assets in Property Ledger	Track Roadway and Distributing System		
1913.....	$24,291.63	$2,287.30	$22,004.33	$887,741.07	2.479%
1914.....	146,458.00	14,691.43	131,766.57	2,506,629.27	5.257%
1915.....	187,567.61	38,032.38	149,535.23	2,693,316.20	5.552%
1916.....	242,627.10	49,699.27	192,927.83	2,946,048.47	6.549%
1917.....	158,432.96	50,503.64	107,929.32	3,386,455.14	3.187%
1918.....	218,247.05	51,130.43	167,116.62	3,657,705.59	4.569%
1919.....	226,063.53	51,790.20	174,273.33	3,933,344.91	4.431%
1920.....	279,655.18	53,103.95	226,551.23	3,961,963.23	5.718%
1921.....	307,446.06	55,555.96	251,890.10	3,971,484.49	6.342%
1922.....	310,748.77	58,138.62	252,610.15	4,080,339.75	6.191%
1923.....	327,203.43	62,666.43	264,537.00	4,154,343.16	6.368%
1924.....	361,761.63	73,409.56	288,352.07	4,295,786.51	6.712%
1925.....	379,157.68	78,927.16	300,230.52	4,490,693.53	6.686%
1926.....	403,370.26	85,426.66	317,943.60	4,664,565.16	6.816%
1927.....	239,851.34	91,192.69	148,658.65	4,772,312.31	3.115%
1928.....	254,047.02	113,718.19	140,328.83	4,854,615.62	2.891%
1929.....	263,823.68	118,475.19	145,348.49	5,437,166.54	2.673%
1930.....	281,373.60	115,642.68	165,730.92	5,506,689.55	3.010%
1931.....	283,536.12	118,431.22	165,104.90	5,546,137.51	2.977%
1932.....	285,893.02	117,388.73	168,504.29	5,580,670.72	3.019%
1933.....	286,994.49	106,494.73	180,499.76	5,580,230.05	3.235%
1934.....	287,000.59	105,830.85	181,169.74	5,581,638.33	3.246%
1935.....	287,052.06	106,945.99	180,106.07	5,529,494.42	3.257%
1936.....	285,920.50	102,668.15	183,252.35	5,862,491.58	3.126%
1937.....	296,013.78	102,288.77	193,725.01	5,886,190.02	3.291%
1938.....	297,596.06	111,146.95	186,449.11	5,953,104.47	3.132%
	$6,922,133.15	$2,035,587.13	$4,886,546.02		

Total Provision as above		$6,922,133.15
Deduct: Charges to Reserve on Account of Assets Retired During Fiscal Years: Prior Years — 1928-1929 to 1936-1937	$530,383.82	
Fiscal Year 1937-1938	76,470.74	
	$606,854.56	
Deduct: Amount not funded credited to Reserve in Fiscal Years 1933-1934 to 1937-1938	1,000,976.99	1,607,831.55
Total Reserve as per Exhibit "A"		$5,314,301.60

MUNICIPAL RAILWAY OF SAN FRANCISCO

FIELD OPERATING STATEMENT

FISCAL YEAR ENDED JUNE 30, 1938

Line	Total Revenues	Operating Expense	Depreciation	Accident Reserve	Bond Interest	Non-Operating *Income* Expense	Total Net Deductions	Net Income	Bond Redemption	Surplus or *Deficit*
B	$495,556.96	$369,397.77	$11,044.94	$11,476.18	$9,074.15	*$916.02*	$400,077.02	$95,479.94	$13,420.00	$82,059.94
C	366,907.92	300,032.49	8,970.93	9,321.18	7,370.21	*744.00*	324,950.81	41,957.11	10,900.00	31,057.11
D	245,183.56	194,608.22	5,818.76	6,045.94	4,780.49	*482.58*	210,770.83	34,412.73	7,070.00	27,342.73
E	143,600.88	168,458.60	5,036.89	5,233.54	4,138.14	*417.73*	182,449.44	*38,848.56*	6,120.00	*44,968.56*
F	360,496.16	216,904.21	6,485.41	6,738.62	5,328.19	*537.87*	234,918.56	125,577.60	7,880.00	117,697.60
H	299,078.42	284,342.70	8,501.80	8,833.74	6,984.79	*705.10*	307,957.93	*8,879.51*	10,330.00	*19,209.51*
J	302,315.09	225,161.99	6,732.31	6,995.16	5,531.04	*558.34*	243,862.16	58,452.93	8,180.00	50,272.93
K	337,011.61	313,244.91	9,365.98	9,731.66	7,694.77	*776.77*	339,260.55	*2,248.94*	11,380.00	*13,628.94*
L	346,456.32	324,530.55	9,703.42	10,082.27	7,972.00	*804.75*	351,483.49	*5,027.17*	11,790.00	*16,817.17*
M	10,213.59	32,205.32	962.93	1,000.53	791.11	*79.86*	34,880.03	*24,666.44*	1,170.00	*25,836.44*
N	427,764.47	323,704.76	9,678.73	10,056.62	7,951.71	*802.71*	350,589.11	77,175.36	11,760.00	65,415.36
Total Cars	$3,334,584.98	$2,752,591.52	$82,302.10	$85,515.44	$67,616.60	*$6,825.73*	$2,981,199.93	$353,385.05	$100,000.00	$253,385.05
Bus No. 1	$67,683.99	$109,622.61	$13,231.76	$11,525.46	$7,385.60	$429.28	$142,194.71	*$74,510.72*	.....	*$74,510.72*
Bus No. 4	45,441.78	37,103.40	744.97	3,904.20	4.08	.....	41,756.65	3,685.13	.....	3,685.13
Bus No. 5	9,634.96	11,797.95	1,424.05	1,240.41	794.86	46.20	15,303.47	*5,668.51*	.....	*5,668.51*
Bus No. 6	15,534.27	19,031.21	2,297.12	2,000.89	1,282.19	74.52	24,685.93	*9,151.66*	.....	*9,151.66*
Total Buses	$138,295.00	$177,555.17	$17,697.90	$18,670.96	$9,466.73	$550.00	$223,940.76	*$85,645.76*	.....	*$85,645.76*
Total	$3,472,879.98	$2,930,146.69	$100,000.00	$104,186.40	$77,083.33	*$6,275.73*	$3,205,140.69	$267,739.29	$100,000.00	$167,739.29

Italic figures denote loss and deficiency.

MUNICIPAL RAILWAY OF SAN FRANCISCO

COMPARATIVE OPERATING RECEIPTS STATEMENT BETWEEN FISCAL YEARS ENDED JUNE 30, 1938 AND JUNE 30, 1937

FISCAL YEAR ENDED JUNE 30, 1938				FISCAL YEAR ENDED JUNE 30, 1937				COMPARISON			
Line	Receipts	Car Hours	Receipts Per Car Hour	Line	Receipts	Car Hours	Receipts Per Car Hour	Line	Receipts	Car Hours	Receipts Per Car Hour
B	$472,675.35	112,382	$4.21	B	$440,467.80	111,850	$3.93	B	$32,207.55	532	$0.28
C	353,164.00	91,278	3.87	C	328,925.80	91,058	3.61	C	24,238.20	220	.26
D	239,252.80	59,211	4.04	D	227,548.30	58,185	3.91	D	11,704.50	1,026	.13
E	138,512.90	51,201	2.71	E	143,825.60	51,838	2.77	E	*5,312.70*	*637*	*.06*
F	343,873.40	65,983	5.21	F	313,363.75	63,523	4.93	F	30,509.65	2,460	.28
H	283,424.35	86,520	3.28	H	233,673.35	78,539	2.98	H	49,751.00	7,981	.30
J	290,460.75	68,537	4.24	J	259,491.60	64,822	4.00	J	30,969.15	3,715	.24
K	321,705.10	95,247	3.38	K	297,707.00	86,289	3.45	K	23,998.10	8,958	*.07*
L	331,545.20	98,749	3.36	L	294,563.60	86,207	3.42	L	36,981.60	12,542	*.06*
M	9,374.75	9,767	.96	M	8,627.25	9,768	.88	M	747.50	*1*	.08
N	406,314.25	98,485	4.13	N	368,021.40	92,528	3.98	N	38,292.85	5,957	.15
Total	3,190,302.85	837,360	3.81	Total	2,916,215.45	794,607	3.67	Total	274,087.40	42,753	.14

Above Receipts Are For 5c Fares Only

Total Receipts (Bus Lines not Included) $3,349,884.22
Total Receipts (Bus Lines not Included) per car hr. $4.00

Bus Lines
Bus Hours—82,318

Receipts $131,769.30
Receipts per Bus Hour... $1.60
Total Receipts All Sources $3,481,653.52
Total Bus and Car Hours. 919,678
Total Receipts per Bus & Car Hr.. $3.79

Above Receipts Are For 5c Fares Only

Total Receipts (Bus Lines not Included) $3,051,429.91
Total Receipts (Bus Lines not Included) per car hr. $3.84

Bus Lines
Bus Hours—78,267

Receipts $116,028.95
Receipts per Bus Hour... $1.48
Total Receipts All Sources $3,167,458.86
Total Bus and Car Hours. 872,873
Total Receipts per Bus & Car Hr.. $3.63

Above Receipts Are For 5c Fares Only

Total Receipts (Bus Lines not Included) $298,454.31
Total Receipts (Bus Lines not included) per car hour $0.16

Bus Lines
Bus Hours—4,051

Receipts $15,740.35
Receipts per Bus Hour..... $0.12
Total Receipts All Sources. $314,194.66
Total Bus and Car Hours... 46,805
Total Receipts per Bus & Car Hr.. $0.16

Italic figures denote loss and deficiency.

MUNICIPAL RAILWAY OF SAN FRANCISCO
SUMMARY OF INCOME AND OUTLAY
December 28, 1912, to June 30, 1938

INCOME			
Passenger and Other Revenue	$71,213,061.64		
Subsidy from Harbor Commission	70,229.71		
Contributed	1,525,015.07		
Interest on Bonds and Daily Balances	663,629.81		
Miscellaneous Credits—Profit and Loss	305,418.32		
Cash Received from Sale of Original Bonds Issued	5,481,000.00		
Total Income and Credits		$79,258,354.55	
OUTLAY			
Operating Expenses	$57,529,946.89		
Bond Interest Charges	4,155,684.24		
Injuries and Damages	1,698,122.54		
Miscellaneous Debits—Profit and Loss	122,151.57		
Total Expenses		63,505,905.24	
Excess of Income over Expenses		15,752,449.31	
Bonds Redeemed		3,981,000.00	
Balance after Expenses and Bond Redemption		$11,771,449.31	
Expended for Construction Extensions, Betterments, Replacements and Renewals and Road and Equipment Retired		10,745,981.28	
Balance, Net Cash, Receivables, Stores, etc., on Hand. See below			$1,025,468.03
SOURCES OF FUNDS			
From Bond Sales	$5,481,000.00		
From Depreciation Reserve Fund	1,061,355.91		
From Earnings and Contributions	4,424,028.26		
	$10,966,384.17		
Deduct Retirements	942,729.79		
	$10,023,654.38		
Add portion of Retirements Charged to Reserves	722,326.90		
	$10,745,981.28		

CASH			
Cash, Manager's Fund, Net	$4,000.00		
*Cash, Operating Fund, Net	552,610.14		
Cash, Accident Reserve Fund, Net	6,881.50		
**Cash, Depreciation Reserve Fund, Net	321,551.13		
Cash, Bond Redemption Fund, Net	.....		
Cash, Bond Interest Fund, Net	.....		
Total Net Cash		$885,042.77	
ACCOUNTS RECEIVABLE			
Due from City and County of San Francisco—Interest	$947.48		
Due from Harbor Commission	.....		
Miscellaneous Accounts Receivable	966.44		
Total Accounts Receivable		1,913.92	
STORES			
At Car Barn	$82,715.20		
At Storage Yard	101,176.95		
Contributed Stores	806.74		
Total Stores		$184,698.89	
DEFERRED ASSETS			
Cash Advanced to P. U. C.—Depreciation Survey	$2,000.00		
Cash Advanced to W. P. A.—City Project Control	1,625.00		
Cash Advanced to Public Utilities Improvement Fund from Operating Fund	1,968.58		
Miscellaneous Deferred Items	407.50		
Total Deferred Assets		6,001.08	
TOTAL CASH, RECEIVABLES, STORES, ETC.		$1,077,656.66	
LIABILITIES			
Accounts Payable	$45,189.48		
Accrued Interest Not Due	6,250.00		
Unadjusted Credits	749.15		
TOTAL LIABILITIES		$52,188.63	
NET FREE ASSETS			$1,025,468.03

*Due to Depreciation Reserve Fund from Operating Fund for balance of Stores turned over to Operating Fund when Stores Revolving Fund was established $7,979.29

*Due to Accident Reserve Fund from Operating Fund—net difference amount reserved and accident costs to date, and less cash in fund—$6,881.50 ..... 89,652.29

**Due to Operating Fund from Depreciation Reserve Fund for labor and material on Depreciation Reserve Fund Replacement Jobs 3,827.96

MUNICIPAL RAILWAY OF SAN FRANCISCO

STATEMENT OF BUS LINE OPERATIONS

From July 1, 1937, to June 30, 1938

	PASSENGER REVENUE				
	Route No. 1—(10th Ave. and California St. to Edna and Monterey Blvd.)	$62,285.10			
	Route No. 4—Embarcadero Route	45,252.20			
	Route No. 5—Marina Route	9,383.40			
	Route No. 6—Eureka-Diamond Route	14,848.60			
	Special Buses	.....			
	Over and Short Adjustment, July 1, 1937 to June 30, 1938	99.45			
	Total Cash Passenger Revenue		$131,868.75		
	REVENUE CREDITS				
1,770	Special Tickets at 2½c	$44.25			
5,106	Special Tickets at 5c	255.30			
128	Q. M. Tickets at 5c	6.40			
244,812	School Tickets at 2½c	6,120.30			
	Total Revenue Credits		6,426.25		
	Total Passenger Revenue and Credits			$138,295.00	
	OPERATING EXPENSES				
	GROUP II—EQUIPMENT				
Acct. No.					
39A	Bus Engines, Labor and Material	$8,886.97			
39B	Painting Buses	314.44			
39C	Chassis, Labor and Material Buses	4,141.10			
39D	Bus Tires, Including Repairs	10,863.69			
39E	Bus Body Repairs	2,559.43			
39F	Repairs to Garage Equipment	69.58			
39G	Transmission, Labor and Material Buses	1,586.62			
39H	Brake Work, Labor and Material Buses	1,740.56			
41G	Loss on Buses Retired	550.00			
	Total—Group II		$30,712.39		
	GROUP IV—CONDUCTING TRANSPORTATION				
78A	Gasoline, Buses	$31,816.08			
78B	Oils and Lubricants, Buses	1,911.44			
78C	Conductors-Chauffeurs, Buses	70,673.80			
78D	Greasing, Servicing and Misc. Expenses	13,163.47			
78E	Cleaning and Washing Buses	4,259.63			
	Total—Group IV		121,824.42		
	GROUP VI—GENERAL AND MISCELLANEOUS				
88A	Pension Costs, Buses	$4,157.04			
88C	Sick Leave—Bus Employees	954.50			
88D	Sick Leave—Medical Fees	104.31			
*89A	Administration, Buses	9,600.00			
89B	Insurance (777,957 miles at .024)	18,670.96			
94	Stationery and Printing	780.00			
95	Store Expense	5,238.39			
98	Rent of Equipment—(2,190 Hrs. at .60)	1,314.00			
98A	Garage, Shop, Office and Equipment Rental	3,420.12			
	Total—Group VI		44,239.32		
	Total Operating Expense			$196,776.13	
	Operating Loss				*$58,481.13*
	FIXED CHARGES				
	Accrued Depreciation Buses	$17,166.70			
	Accrued Depreciation Garage Equipment	438.56			
	Accrued Depreciation Fare Boxes	92.64			
	Interest on Investment at 5%	9,466.73			
	Total Fixed Charges				27,164.63
	**Net Loss Fiscal Year				*$85,645.76*
	Average Net Loss Per Day (365 Days' Operation)				*234.65*
	*Allocation:				
	Superintendence—Plant and Equipment	$2,918.40			
	Superintendence—Operation of Buses	2,918.40			
	Administration—General	3,763.20			
		$9,600.00			

Italic figures denote loss and deficiency.

Acct. No.		Bus Mileage 777,957 Miles Itemized Cost Per Mile	Bus Hours 82,318 Hours Itemized Cost Per Hour
39A	Bus Engines, Labor and Material	.01142	.10796
39B	Painting Buses	.00041	.00382
39C	Chassis, Labor and Material, Buses	.00532	.05031
39D	Bus Tires, Including Repairs	.01396	.13197
39E	Bus Body Repairs	.00329	.03109
39F	Repairs to Garage Equipment	.00009	.00085
39G	Transmission, Labor and Material, Buses	.00204	.01927
39H	Brake Work, Labor and Material, Buses	.00224	.02114
41G	Loss on Buses Retired	.00071	.00668
	Total Group II—Equipment	.03948	.37309
78A	Gasoline—Buses	.04090	.38650
78B	Oils and Lubricants—Buses	.00246	.02322
78C	Conductors-Chauffeurs, Buses	.09084	.85855
78D	Greasing, Servicing and Misc. Expense, Buses	.01692	.15991
78E	Cleaning and Washing Buses	.00547	.05175
	Total Group IV—Conducting Transportation	.15659	1.47993
88A	Pension Costs—Buses	.00534	.05050
88C	Sick Leave—Bus Employees	.00123	.01159
88D	Sick Leave—Medical Fees	.00014	.00127
89A	Administration—Buses	.01234	.11662
89B	Insurance—Buses	.02400	.22682
94	Stationery and Printing	.00100	.00947
95	Store Expense	.00673	.06364
98	Rent of Equipment	.00169	.01596
98A	Garage, Shop, Office and Equipment Rental	.00440	.04155
	Total Group VI—General and Miscellaneous	.05687	.53742
	Total Operating Expense	.25294	2.39044
	Accrued Depreciation	.02275	.21500
	Interest on Investment	.01217	.11500
	Total Fixed Charges	.03492	.33000
	Total Expense	.28786	2.72044
	Passenger Revenue Per Bus Mile	.16951	1.60194
	Revenue Credits Per Bus Mile	.00826	.07807
	Total Revenue	.17777	1.68001
	Net Loss	*.11009*	*1.04043*

PASSENGERS CARRIED

5c Fares	$2,637,375
5c Government Tickets	128
2½c School Tickets	244,812
Local Transfers	1,618,853
Free Passengers	4,903
Special Tickets, Free	1,323
Special Tickets, 2½c	1,770
Special Tickets, 5c	5,106
	$4,514,270

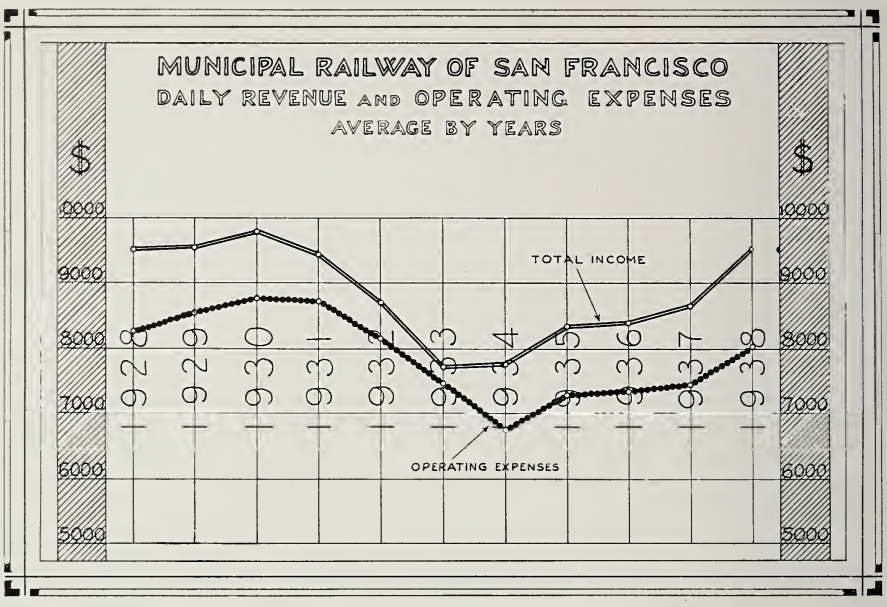
NOTE: Charges to Insurance Reserve July 1, 1937 to June 30, 1938.

Proportion Salary Expenses Claims Department	$2,163.75
Accident Claims Paid	1,820.26
Insurance Premiums Paid	74.80
	$4,058.81

NOTE: No subsidy receivable from the State Board of Harbor Commissioners for the fiscal year July 1, 1937 to June 30, 1938 as no loss is shown by operation of Embarcadero Bus Route for said fiscal year.

**NOTE: Bus Route No. 1—10th Ave. and California Street to Edna Street and Monterey Blvd—rerouted over Judah Street, 18th Avenue and Taraval Street during reconstruction of 7th Ave. from February 16 to May 28, 1938.
Bus Route No. 6 extended from previous terminus at Clipper and Diamond Streets to new terminus at Duncan and Diamond Streets, a distance of four blocks, on May 5. 1938.

Italic figures denote loss and deficiency.



MUNICIPAL RAILWAY OF SAN FRANCISCO
COMPARATIVE STATEMENT DATA FOR FISCAL YEARS ENDED JUNE 30, 1938 AND JUNE 30, 1937

	Fiscal Year Ended June 30, 1938				Fiscal Year Ended June 30, 1937			
	Total	Ratio to Passenger Revenue	Per Car Mile	Per Car Hour	Total	Ratio to Passenger Revenue	Per Car Mile	Per Car Hour
Passenger Revenue	3,444,745	100.000	.3739	3.7456	3,137,584	100.000	.3580	3.5945
Operating Expense	2,930,147	85.061	.3181	3.1861	2,713,913	86.497	.3097	3.1092
Interest on Funded Debt	77,083	2.238	.0084	.0838	82,083	2.616	.0094	.0940
Provision for Depreciation	100,000	2.903	.0109	.1087	100,000	3.187	.0114	.1146
Provision for Accidents	104,186	3.024	.0113	.1133	94,922	3.025	.0108	.1087
Net Income	267,739	7.772	.0290	.2911	179,729	5.728	.0205	.2059
Passenger Car and Bus Mileage	9,212,687	....	....	....	8,763,838	....	....	....
Passenger Car and Bus Hours	919,679	....	....	....	872,873	....	....	....
Platform Expense	1,474,529	42.805	.1601	1.6033	1,392,140	44.370	.1588	1.5949
Number of Passenger Cars Owned	234	....	....	....	234	....	....	....
Number of Work Cars Owned	6	....	....	....	6	....	....	....
Total Number of Cars Owned	240	....	....	....	240	....	....	....
Total Number of Buses Owned	19	....	....	....	19	....	....	....
Total No. of Cars and Buses Owned	259	....	....	....	259	....	....	....
Revenue Passengers Carried	70,981,644	....	7.7048	77.1809	64,606,498	....	7.3719	74.0159
Free Transfer Passengers Carried	18,786,761	....	2.0392	20.4275	15,600,699	....	1.7801	17.8728
Free Passengers (Employees, Police, etc.)	522,114	....	.0567	.5677	546,887	....	.0624	.6265
Total Passengers Carried	90,290,519	....	9.8007	98.1761	80,754,084	....	9.2144	92.5153

Note: Above includes Bus Operation.

MUNICIPAL RAILWAY OF SAN FRANCISCO

COST STATEMENT—ITEMIZED ACCOUNTS

Fiscal Year July 1, 1937 to June 30, 1938

STREET CAR OPERATION ONLY

I. WAY AND STRUCTURES

Acct. No.	Name	Amount	Per Car Mile	Per Car Hour
1	Superintendent Way and Structures	$13,934.71	.00165	.01664
2	Ballast	303.53	.00004	.00036
3	Ties	172.95	.00002	.00021
4	Rails	2,129.08	.00025	.00254
5	Rail Fastenings and Joints	3,827.67	.00045	.00457
6	Special Work	1,331.13	.00016	.00159
8	Roadway and Track Labor	65,086.93	.00771	.07773
9	Miscellaneous Road and Track Expense	3,723.18	.00044	.00445
10	Paving	12,218.18	.00145	.01459
11	Cleaning and Sanding Track	25,117.54	.00298	.02999
13	Tunnels	970.47	.00011	.00116
16	Crossings, Fences, Guards and Signs	341.94	.00004	.00041
17	Signal and Interlocking Systems	316.46	.00004	.00038
18	Telephone and Telegraph System	21.12	.....	.00002
20	Poles and Fixtures	3,945.86	.00047	.00471
21	Underground Conduits	107.82	.00001	.00013
22	Distribution System	20,131.26	.00239	.02404
23	Miscellaneous Electric Line Expense	231.66	.00003	.00028
24	Buildings and Structures	2,668.45	.00032	.00319
28	Transportation for Investment Credit	*1,304.00*	*.00015*	*.00156*
	Total Way and Structures	$155,275.94	.01841	.18543

II. EQUIPMENT

29	Superintendent of Equipment	$3,000.00	.00036	.00358
30	Passenger and Combination Cars	136,609.53	.01619	.16314
32	Service Equipment	8.18	.....	.00001
33	Electric Equipment of Cars	31,416.66	.00372	.03752
36	Shop Equipment, Machinery and Tools	417.65	.00005	.00050
37	Shop Expenses	4,564.02	.00054	.00545
38	Vehicles and Horses	1,753.73	.00021	.00209
	Credit Charges to Bus Line Operation	*550.00*	*.00006*	*.00065*
	Total Equipment	$177,219.77	.02101	.21164

Italic figures denote loss and deficiency.

III. POWER

Acct. No.	Name	Amount	Per Car Mile	Per Car Hour
47	Power Plant Equipment	$63.56	.00001	.00008
59	Power Purchased—Propulsion	510,400.05	.06051	.60953
59A	Power Purchased for Lighting Car Barns.	3,963.25	.00047	.00473
59B	Power Purchased for Lighting Tunnels...	1,645.54	.00019	.00197
	Total Power	$516,072.40	.06118	.61631

IV. CONDUCTING TRANSPORTATION

63	Superintendent of Transportation	$105,972.50	.01256	.12656
64	Conductors and Motormen	1,403,855.42	.16644	1.67653
66	Miscellaneous Car Service Employees....	4,292.53	.00051	.00513
67	Miscellaneous Car Service Expense.....	10,348.05	.00123	.01236
68	Station Employees	11,747.91	.00139	.01403
69	Station Expense	1,415.74	.00017	.00169
70	Car House Employees	133,160.25	.01579	.15902
71	Car House Expense	3,923.09	.00046	.00468
73	Oper. of Telephone & Telegraph System..	4,286.22	.00051	.00512
78	Miscellaneous Transportation Expense...	549.00	.00006	.00065
	Total Conducting Transportation.....	$1,679,550.71	.19912	2.00577

VI. GENERAL AND MISCELLANEOUS

83	Salaries and Expense—General Office....	$14,700.00	.00174	.01756
84	Salaries and Expense—Gen. Office Clerks.	18,739.70	.00222	.02238
85	General Office Supplies and Expense.....	2,570.48	.00031	.00307
88	Pensions and Gratuities	138,723.88	.01645	.16567
89	Miscellaneous General Expense	7,640.28	.00091	.00913
92	Injuries and Damages—Employees.....	22,988.00	.00273	.02745
93	Insurance	1,040.93	.00012	.00124
94	Stationery and Printing	13,676.52	.00162	.01633
95	Store Expense	4,582.32	.00054	.00547
96	Garage and Stable Expenses	2,473.86	.00029	.00295
97	Rent of Tracks and Terminals	4,793.55	.00057	.00573
	Credit Charges to Bus Line Operation....	*8,006.82*	*.00095*	*.00956*
	Total General and Miscellaneous.....	$223,922.70	.02655	.26742

Italic figures denote loss and deficiency.

RECAPITULATION

Acct. No.	Name	Amount	Per Car Mile	Per Car Hour
I.	Way and Structures	$155,275.94	.01841	.18543
II.	Equipment	177,219.77	.02101	.21164
III.	Power	516,072.40	.06118	.61631
IV.	Conducting Transportation	1,679,550.71	.19912	2.00577
VI.	General and Miscellaneous	223,922.70	.02655	.26742
	Total Recapitulation	2,752,041.52	.32627	3.28657
	Depreciation Reserve $100,000.00			
	Less: Applicable to Buses 17,697.90	$82,302.10	.00976	.09829
	*Accident Reserve 104,186.40			
	Less: Applicable to Buses 18,670.96	85,515.44	.01014	.10213
	Bond Interest 77,083.33			
	Less: Applicable to Buses 9,466.73	67,616.60	.00802	.08075
	Grand Total	$2,987,475.66	.35419	3.56774
	*Actual Payments and Accident Costs	$98,373.99		
	Less: Applicable to Buses	4,058.18		
		94,315.18		
	Car Mileage 8,434,730			
	Car Hours 837,360			

Note: Bus Line Operation not Included.

MUNICIPAL RAILWAY OF SAN FRANCISCO

COST STATEMENT—ITEMIZED ACCOUNTS

Fiscal Year July 1, 1937 to June 30, 1938

BUS OPERATIONS ONLY

II. EQUIPMENT

Acct. No.	Name	Total	Per Bus Mile	Per Bus Hour
39A	Bus Engines—Labor and Equipment	$8,886.97	.01142	.10796
39B	Painting Buses	314.14	.00041	.00382
39C	Chassis—Labor and Material—Buses	4,141.10	.00532	.05031
39D	Bus Tires, including Repairs	10,863.69	.01396	.13197
39E	Bus Body Repairs	2,559.43	.00329	.03109
39F	Repairs to Garage Equipment	69.58	.00009	.00085
39G	Transmission—Labor and Mat.—Buses	1,586.62	.00204	.01927
39H	Brake Work—Labor and Mat.—Buses	1,740.56	.00224	.02114
41G	Loss on Buses Retired	550.00	.00071	.00668
	Total Equipment	$30,712.39	.03948	.37309

IV. CONDUCTING TRANSPORTATION

Acct. No.	Name	Total	Per Bus Mile	Per Bus Hour
78A	Gasoline—Buses	$31,816.08	.04090	.38650
78B	Oils, Lubricants—Buses	1,911.44	.00246	.02322
78C	Conductor-Chauffeurs—Buses	70,673.80	.09084	.85855
78D	Greasing and Servicing—Buses	13,163.47	.01692	.15991
78E	Cleaning and Washing Buses	4,259.63	.00547	.05175
	Total Conducting Transportation	$121,824.42	.15659	1.47993

VI. GENERAL AND MISCELLANEOUS

88A	Pension Costs—Buses	$4,157.04	.00534	.05050
88C	Sick Leave—Bus employees	954.50	.00123	.01159
88D	Sick Leave—Medical expenses	104.31	.00014	.00127
*89A	Administration—Buses	9,600.00	.01234	.11662
94	Stationery and Printing	780.00	.00100	.00947
95	Store Expenses	5,238.39	.00673	.06364
98	Rent of Equipment	1,314.00	.00169	.01596
98A	Garage, Shop, Office and Equip. Rental	3,420.12	.00440	.04155
	Total General and Miscellaneous	$25,568.36	.03287	.31060

*Allocation:

Superintendence—Plant and Equipm't	$2,918.40
Superintendence—Operation of Buses	2,918.40
Administration—General	3,763.20
	$9,600.00

RECAPITULATION

II.	Equipment	$30,712.39	.03948	.37309
IV.	Conducting Transportation	121,824.42	.15659	1.47993
VI.	General and Miscellaneous	25,568.36	.03287	.31060
	Total Recapitulation	$178,105.17	.22874	2.16362
	Depreciation Reserve	$17,697.90	.02275	.21500
	**Injuries and Damages (Reserve)	18,670.96	.02400	.22682
	Total Reserves	$36,368.86	.04675	.44182
	Interest on Investment	$9,466.73	.01217	.11500
	Total Bus Costs	$223,940.76	.28786	2.72044
	**Actual Payments and Accident Costs	$4,058.81		
	Bus Mileage	777,957		
	Bus Hours	82,318		

MUNICIPAL RAILWAY OF SAN FRANCISCO

ANNUAL REPORT OF BUREAU OF CLAIMS

Fiscal Year Ended June 30, 1938

1.	Total passengers carried during year		90,290,519
2.	Car miles operated:		
	Cars	8,434,730	
	Buses	777,956	9,212,686
3.	Number of pasengers to mile		9.80
* 4.	Number of accident reports filed		4,074
5.	Number of accidents fatal		4
6.	Number of fatal accidents to passengers		2
7.	Number of accidents—personal injuries		1,159
8.	Number of claims presented		860
9.	Number of claims adjusted		511
10.	Number of suits instituted		73
11.	Number of suits pending		83
12.	Number of passengers carried per accident report		22,163
13.	Number of passengers carried per personal injury report		77,904
14.	Number of passengers carried per fatal accident		45,145,260

Classification

1.	Car Collisions	47	.0115
2.	Auto and wagon collisions	1,940	.4762
3.	Boarding moving car	363	.0891
4.	Leaving moving car	122	.0299
5.	Miscellaneous	1,602	.3933
		4,074	1.0000
1.	Percentage of accidents to passengers carried		.00005
2.	Total Revenue		$3,472,879.98
3.	Total amount paid for accident claims, office and miscellaneous expense		$98,373.99
4.	Ratio to operating revenue		.0283

Recapitulation

Amounts Paid

1.	Personal injuries	$58,942.96
2.	Property damage	4,395.57
** 3.	Salaries and wages	25,220.78
4.	Miscellaneous and hospital	9,814.68
	Total	$98,373.99

Note:

* Item No. 4 of the above "Number of Accident Reports Filed" also includes any and all reports of accidents happening near the cars in which this Railway was not involved.

** Salaries and wages account includes expense of City Attorney's Office which amounts to $10,000.00 yearly.

COMPARATIVE STATEMENT OF COMPLAINTS AND COMMENDATIONS

Fiscal Years Ended June 30, 1938 and June 30, 1937

	GEARY STREET DIVISION		17th STREET DIVISION	
	Fiscal Year Ended June, 1938	Fiscal Year Ended June, 1937	Fiscal Year Ended June, 1938	Fiscal Year Ended June, 1937
Discourtesy	54	34	50	37
Improper handling of transfers	25	14	18	21
Not allowing passengers sufficient time to board or alight from cars	39	28	46	29
Failure to stop for intending passengers	30	32	38	35
Carrying passengers beyond destination	17	17	24	22
Careless operation of car	28	21	29	20
Miscellaneous	79	38	77	39
Total no. complaints received	272	184	282	203
Commendations received	26	19	16	13

COMPARATIVE STATEMENT OF BAD ORDER CARS TURNED IN

Fiscal Year Ended June 30, 1938

	Geary St. Car Barn	17th St. Car Barn	Total	System Average
Number of Cars	274	364	638	
Mileage	3,232,907	5,201,823	8,434,730	
Mileage per turn-in	11,799	14,291		13,221
Accidents not included in above	154	211	365	

Fiscal Year Ended June 30, 1937

Number of Cars	253	313	566	
Mileage	3,199,524	4,836,848	8,036,372	
Mileage per turn-in	12,646	15,453		14,199
Accidents not included in above	140	175	315	

Decreased mileage per turn-in Fiscal Year Ended June 30, 1938 under Fiscal Year Ended June 30, 1937 978

BUS ROUTES IN OPERATION—JUNE 30, 1938

ROUTE No. 1:	Miles		Miles
From Tenth Avenue and California Street via Tenth Avenue, Golden Gate Park, Ninth Avenue, Judah Street, Seventh Avenue, Laguna Honda Boulevard, Portola Drive, Miraloma Drive, Yerba Buena Drive, Plymouth Avenue, Monterey Boulevard, Ridgewood Avenue, Hearst Avenue to Edna Street and Monterey Boulevard. Connects with Lines "B," "C," "K," "L," and "N."			
Mileage one way	5.15	Round Trip	10.30
ROUTE No. 4:			
From Aquatic Park at Hyde and Jefferson Streets via Jefferson Street, the Embarcadero, Berry Street and Third Street to Southern Pacific Depot.			
Mileage one way	3.40	Round Trip	6.80
ROUTE No. 5:			
From terminus of Line "F" at Scott and Chestnut Streets via Chestnut Street and Broderick Street, to Marina Boulevard.			
Mileage one way	.56	Round Trip	1.12
ROUTE No. 6:			
From the Eureka Valley Station of the Twin Peaks Tunnel at Market and Eureka Streets, East on Market Street to Collingwood Street, South on Collingwood Street to Nineteenth Street, West on Nineteenth Street to Eureka Street, South on Eureka Street to Twenty-third Street, East on Twenty-third Street to Diamond Street, South on Diamond Street to Duncan Street.			
Mileage one way	1.39	Round Trip	2.78
TOTAL BUS MILEAGE ONE WAY	10.50	Round Trip	21.00

MILEAGE—SINGLE TRACK—JUNE 30, 1938

Operated Track:		
Track Owned and Operated June 30, 1938	74.52	
Track Owned and Operated Jointly with the Market Street Railway Company	4.30	
Total Operated Track		78.82
Non-Operated Track, Sidings, Turn-outs, etc.:		
Taraval Street between Forty-sixth and Forty-eighth Avenue	.25	
Masonic Avenue Spur	.02	
Polk and Geary Streets Spur	.05	
Columbus Avenue, between Washington and Jackson Streets	.08	
Geary Street Carhouse, Sidings and Turn-outs	2.18	
Seventeenth Street Carhouse, Sidings and Turn-outs	1.65	
Total		4.23
Total Single Track Mileage, June 30, 1938		83.05

MILES, ROUTES AND ROUTE MILEAGE—JUNE 30, 1938

Line "B"	14.12	Ocean to Ferries via Geary Street.
Line "C"	11.82	Thirty-third Avenue and California Street to Ferries via California and Geary Streets.
Line "D"	8.48	Presidio to Ferries via Van Ness Avenue and Geary Street.
Line "E"	7.54	Presidio to Ferries via Union Street and Columbus Avenue.
Line "F"	6.16	Scott and Chestnut Streets to Market, Fourth and Ellis Streets via Chestnut and Stockton Streets.
Line "H"	9.32	Army Street and Potrero Avenue to Fort Mason Transport Docks via Potrero and Van Ness Avenues.
Line "J"	9.12	Thirtieth and Church Streets to Ferries via Church and Market Streets.
Line "K"	15.34	Grafton and Brighton Avenues to Ferries via Ocean Avenue, Twin Peaks Tunnel and Market Street.
Line "L"	16.32	Beach to Ferries via Taraval Street, Twin Peaks Tunnel and Market Street.
Line "M"	4.84	Plymouth Avenue and Broad Street to St. Francis Circle via Broad Street and Nineteenth Avenue.
Line "N"	14.56	Ocean Beach to Ferries via Judah Street, Sunset Tunnel and Market Street.
	117.62	Total Route Mileage.
	78.82	Total Track Mileage Operated.
	38.80	Duplicate Routes

CHRONOLOGY

December 2, 1902. Election. Proposition authorizing $700,000.00 bonds defeated.

October 8, 1903. Election. Proposition authorizing $710,000.00 bonds defeated.

November 6, 1903. Franchise of Geary Street, Park and Ocean Railroad Company expired.

June, 1906. Budget appropriation $325,000.00 for Geary Street Railroad. Used for reconstruction and rehabilitation of streets and buildings destroyed in disaster of April 18-22, 1906.

June, 1907. Budget appropriation $720,000.00 for Geary Street Railroad. Subsequently declared invalid by court.

June 24, 1909. Election. Proposition authorizing $1,950,000.00 bonds defeated, lacking 203 votes.

December 30, 1909. Election. Proposition authorizing $2,020,000.00 bonds carried by 20,000 majority.

April 16, 1910. Superior Court declares bond issue valid in every respect. Decision affirmed by Supreme Court in July, 1910.

July 18, 1910. First lot of bonds, $121,000.00 sold.

Summer, 1911. Construction of Geary Street Railroad commenced.

May 5, 1912. The Geary Street, Park & Ocean Railroad (cable system) ceased operations.

December 28, 1912. The Municipal Railway (overhead trolley system) commenced operation on Geary Street from Kearny Street to Thirty-third Avenue and Park, with ten (10) cars, under direction of Thomas A. Cashin, Superintendent, Mayor James Rolph, Jr., acting as motorman on first car.

April 22, 1913. Referendum election. Agreement with Sutter Street Railroad Company respecting use of tracks on lower Market Street ratified.

June 25, 1913. Municipal Railway in full operation from Ferries to Beach and Park. Forty-three cars owned.

August 26, 1913. Election. Proposition authorizing $3,500,000.00 bonds for extensions of Municipal Railway carried by 37,670 majority.

December 11, 1913. Presidio & Ferries R. R. Company (Union Street Division) taken over by Municipal Railway.

May 16, 1914. Masonic Avenue branch completed.

August 15, 1914. Van Ness Avenue line from Market Street in operation to Exposition grounds.

September 7, 1914. Potrero Avenue line in operation, Eleventh and Market Streets to Twenty-fifth Street and Potrero Avenue.

December 29, 1914. Stockton Street, Columbus Avenue and North Point line in operation through tunnel.

December 29, 1914. Fort Mason Loop commenced operation.

February 10, 1915. Columbus Avenue line in operation from Ferries to Exposition grounds.

February 19, 1915. California Street line in operation to Thirteenth Avenue.

March 28, 1915. California Street line in operation to Thirty-third Avenue.

April 25, 1915. Beach loop, Geary Street line, commenced operation.

January 24, 1916. Stockton Street branch ("E") in operation from Presidio to Market, Fourth and Ellis Streets.

April 29, 1916. Church Street line (Sect. "C"), Sixteenth to Eighteenth and Twenty-second to Thirtieth Streets, ready for operation.

June 1, 1916. Columbus Avenue ("J" line), Ferries to Exposition grounds discontinued.

June 12, 1916. Church Street line (Sect. "A"), Van Ness Avenue and Market Street to Sixteenth and Church Streets, started by day labor. Held up by United Railroads injunction.

June 28, 1916. Church Street line (Sect. "B"), Eighteenth to Twenty-second Streets, ready for operation.

December 21, 1916. Potrero Avenue line ("H") extended from Twenty-fifth Street to Army Street. Twenty-two hundredths mile added. Placed in operation January 19, 1917.

August 11, 1917. Church Street line ("J"), Van Ness Avenue and Market Street to Church and Thirtieth Streets, commenced operation.

February 3, 1918. Twin Peaks tunnel line ("K") to Van Ness Avenue and Bush Street commenced operation. (Length of tunnel 11,920 feet.)

May 4, 1918. Greenwich Street extension (Van Ness Avenue line), Scott to Baker Street, commenced operation.

June 1, 1918. Market Street lines ("J" and "K"), Van Ness Avenue to Geary Street, commenced operation, establishing through service, Ferries to Sloat Boulevard.

October 30, 1918. Third loop opened at Ferry terminus.

February 21, 1919. Market Street line ("K") commenced operation over United Railroads tracks on Ocean Avenue to Miramar Avenue.

April 12, 1919. Taraval Street line ("L") commenced operation from West Portal of Twin Peaks tunnel to Thirty-third Avenue, operating co-jointly with the United Railroads on Taraval Street between Twentieth Avenue and Thirty-third Avenue.

May 18, 1919. Market Street line ("K") commenced operation over extension along Ocean and Brighton Avenues to Grafton Avenue.

July 22, 1919. Changed and shortened route of Van Ness Avenue line ("D") and Union Street line ("E") by track connection on Union Street between Franklin Street and Van Ness Avenue.

August 7, 1919. One elevator placed in operation at Forest Hill station of Twin Peaks tunnel.

December 8, 1919. Presidio loop, Van Ness Avenue and Union Street lines, commenced operation.

January 14, 1923. Taraval Street line ("L") commenced operation over extension on Taraval Street, between Thirty-third Avenue and Ocean Beach.

October 15, 1923. Taraval Street line ("L") operated as a through line from Beach to Ferries via Twin Peaks tunnel and Market Street.

October 6, 1925. Line "M" commenced operation between Plymouth Avenue and Broad Street to St. Francis Circle.

February 1, 1928. Second elevator (the largest on the Pacific Coast) installed at Forest Hill station of Twin Peaks tunnel.

October 21, 1928. Line "N" commenced operation between Forty-eighth Avenue and Judah Street and the Ferries.

January 8, 1932. Jurisdiction over the San Francisco Municipal Railway was transferred from the Board of Public Works to the San Francisco Public Utilities Commission under provisions of the new charter.

June 1, 1932. Line "O" commenced operation between Van Ness Avenue and Market Street and the Presidio (a rearrangement of lines "D," "E," and "H").

July 15, 1932. Line "O" abandoned and lines "D," "E," and "H" placed on their original routing.

December 5, 1932. Line "A" discontinued.

December 5, 1932. Bus Route No. 1 extended to Tenth Avenue and Lake Street.

January 3, 1933. Bus Route No. 2 discontinued.

January 30, 1933. Bus Route No. 1 North Terminal changed to Tenth Avenue and California Street.

December 5, 1933. Bus Route No. 1 South Terminal changed to Edna Street and Monterey Boulevard.

July 28, 1935. Bus Route No. 6 commenced operation. Eureka Valley Station to Diamond and Clipper Streets.

September 15, 1937. Line "L" extension to Fleishhacker Pool commenced operation.

January 1, 1938. Bus Route No. 5 Marina Route routed over Broderick Street instead of Divisadero Street.

May 8, 1938. Bus Route No. 6 South Terminal changed to Diamond and Duncan Streets.

June 30, 1938. Total single track mileage, 83.05 (see mileage statement).

June 30, 1938. Total one-way bus mileage 10.50 (see mileage statement).

Compiled Under Direction
of the
PUBLIC UTILITIES COMMISSION
by
JACKSON T. CARLE
Director
BUREAU OF PUBLIC RELATIONS

HOOPER PRINTING COMPANY
545 SANSOME STREET
SAN FRANCISCO